GOLD COAST COLONY.

REPORT

ON THE

Medical Department

FOR THE YEAR

1931-32.

GOLD COAST:

Printed by the Government Printer at the Government Printing Office, Accra.
To be purchased from the Government Printing Office (Publications Branch), Accra, Gold Coast Colony, and from the Crown Agents for the Colonies, 4, Millbank, London, S.W.1.

1932.

Price—Four Shillings.

CORRIGENDA.

1. Under columns 4, 7, 10, 13 and 16 of Table shewing Births, Deaths and Infant Mortality Rate on page 15, delete the mortality rate totals, namely, 827, 760, 669, 819 and 888.

2. Under column 9 of Table IV, page 18, line 7 of figures, read " 6 " instead of " 9 ".

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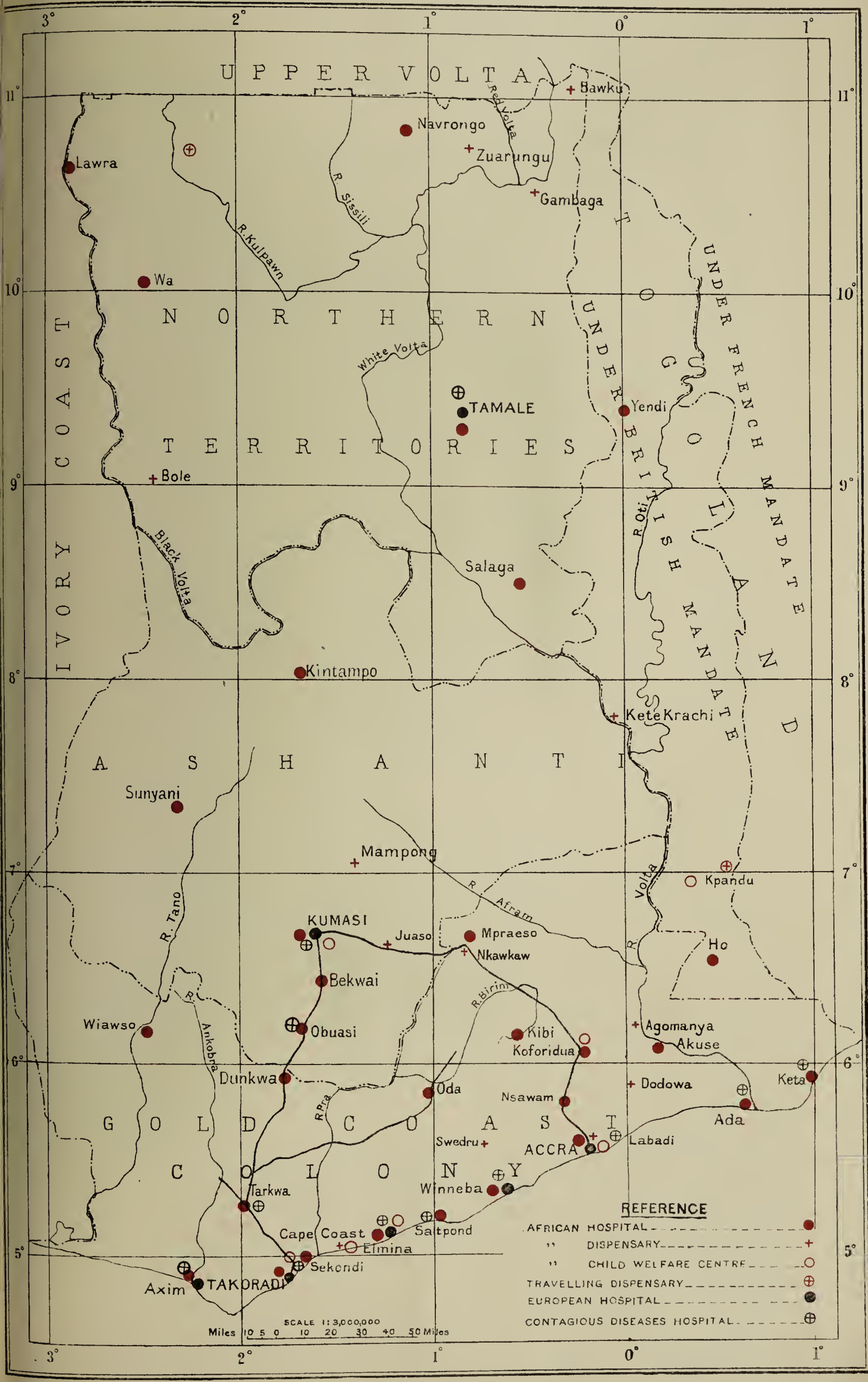
THE GOLD COAST MEDICAL FACILITIES MAP.



SURVEY H.Q. ACCRA 1932.

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SHORT SUMMARY OF PRINCIPAL FEATURES OF THE REPORT.

The present report has been much reduced in size as compared with reports of recent years. The essential features of previous reports have, however, been retained.

For the first time for several years there has been a drop in the numbers treated by the Medical Branch, viz., 7.25 per cent less than the previous year's total, *see* page 4.

The steady increase from 97,910 in 1925–26 to 213,708 five years later in 1930–31 was very remarkable, but the figure for 1931–32, viz., 198,205 is still very high, *see* page 4.

The decrease has been due in the main to reduction in the number of ordinary Medical Officers of the Medical Branch, which fell from 42 (46 authorized) in 1929–1930 to 33 (33 authorized) in 1931–32, although trade depression and a diminution in the number of pauper immigrants had no doubt some influence. The strain thrown on the ordinary Medical Officers remaining has not really been relieved by the drop in the number of cases treated, *see* page 5.

The general health of the European community was not so good as in the past few years, the health of officials especially being affected adversely by an outbreak of Yellow Fever which is described in Section III. Four of the seven deaths of officials for the year were due to this disease. Table 9 of Vital Statistics summarizes the essential figures, *see* page 13.

The health of the African community remained fairly good although trade depression meant hardship for the large immigrant labouring class owing to shortage of money and hence food, *see* page 14.

An outbreak of smallpox in a mild form took place in Eastern Dagomba (Northern Territories) and the neighbouring area of Togoland. Two hundred and one cases occurred with a mortality of eight per cent, *see* page 19.

The percentage of yaws cases treated as compared with all cases treated remained almost the same as in 1930–31, namely, just over 26 per cent. The importance of this figure needs no emphasis, *see* page 21.

One of the Travelling Dispensaries continued work in the Lawra area during the year. Owing to shortage of staff the second, which has been at work in the Northern section of the Ho District (Mandated Togo), could only be kept on the road for some seven months, *see* page 39.

Malaria continued its heavy drain on the health of all classes. The steadiness of the drain is shown by the fact, for example, that the percentage of malaria to all cases treated (six per cent) and the percentage of working days lost by European officials through this disease (20 per cent) remain almost the same year after year, *see* page 6 and 11.

The case incidence of Blackwater Fever increased and mortality increased, but mortality remained below that of the five-year period, 1923–28, and well below that of the period 1917–21, *see* page 6.

The rise in the number of cases of Enteric noted in the previous year has dropped peculiarly. It will be interesting to observe the effect in succeeding years of the campaign in favour of anti-typhoid inoculation now going on, *see* page 7.

The work of the Ho Leper Settlement continued but the prevailing financial depression is reflected here also by a drop in numbers. The effect of the Akata Settlement in French Togo in attracting back French sufferers is noted, *see* pages 9, 88, 89.

The incidence of Tuberculosis in the Colony appears to vary little from year to year although it is always high in the mining areas. The close association everywhere between the gold mining industry and a high rate for Tuberculosis is exemplified in the mining areas of the Gold Coast, *see* pages 8 and 22.

Section III (Hygiene and Sanitation) contains a record of part of the valuable work of the Health Branch during the year. The campaign by various methods against malaria proceeds, and the preventive measures taken against other diseases, such as mosquito control for Yellow Fever, vaccination and isolation for smallpox anti-rat measures for plague, disinfestation of immigrant labourers for relapsing fever and so on, each disease being dealt with by appropriate measures, are fully set forth, *see* page 16.

General routine sanitation has also gone steadily on. After a three years' period of freedom, Yellow Fever recurred and for the first time appeared in epidemic form in the Northern Territories, most of the cases being in the Tamale area. European officials and Syrians suffered especially.

Vaccination being our chief weapon in controlling smallpox, over 374,000 vaccinations were performed with a satisfactory percentage of success of over 87, *see* page 19.

The introduction into Ashanti and the Colony of Relapsing Fever by lousy immigrant labourers from the North is a constant problem. The disinfestation station at Kumasi performed excellent work during the year, over 18,000 labourers passing South to the cacao areas having been dealt with. The opening of a new station at Tamale is bound to be of much value, *see* page 21.

In spite of financial depression certain definite advances are recorded. A well-planned scheme of anti-malaria work in the dangerous marshy area west of Achimota College, the opening of a new pipe-borne water supply for Tamale in March, 1932, steady progress on the Kumasi water supply scheme, the erection of a goodly number of well-constructed buildings in the larger towns by private individuals, the opening of the new market at Cape Coast should all be noted, *see* pages 27.

In Section IV appears a short note on the Port Health work of the year, which is efficiently carried on by the Health Branch. No port was declared infected during the year, *see* page 35.

Section V is a short note on Maternity and Child Welfare, and records the setback in this important branch of work owing to the financial depression, *see* page 35.

The unfortunate results of still further retrenchment are envisaged and the possibility of fresh reorganisation and development on voluntary lines foreshadowed. The urgency of the need of a Maternity Hospital at Kumasi for obstetric emergencies and the training of midwives is again noted.

In Section VI the work of the Hospitals and Dispensaries is dealt with, *see* page 36.

The scheme for training Nurse-Dispensers went forward, although the call in January, 1932, for further retrenchments endangered it. It has, fortunately, been posible to preserve it in essentials, *see* page 38.

Very unfortunately the grant of any Government Medical Scholarship for 1932 was held up owing to the financial situation. The scheme was gazetted in October, 1930, and one candidate was selected for 1931. After completing local studies at Achimota he will proceed to England in September, 1932, *see* page 38.

The work at the Venereal Diseases Clinic at the Gold Coast Hospital has suffered a setback owing to the shortage of staff. This is reflected in the figures of attendances. The usefulness of the African Hospitals at Accra, Kumasi, etc., is well maintained, *see* page 39.

The work of the Travelling Dispensaries has had to be curtailed, *see* page 37.

Section IX (*c*) contains some interesting reports of cases, the case of Rheumatic Fever at Accra being of definite importance. Previous cases at Tamale were recorded in the report for 1930–31, *see* page 58.

In the Appendices the Report on the Maternity Hospital, Accra, should be noted, and the Report of Miss C. D. Williams on Deficiency Diseases in Infants is of special interest and value, *see* pages 90 and 93.

D. DUFF,
Director of Medical and
Sanitary Service.

Annual Medical and Health Report for the Year 1931-32.

I.—ADMINISTRATION.—MEDICAL, HEALTH AND LABORATORY BRANCHES.

Table I on page 63 shews the actual staff of the Medical, Health and Laboratory branches of the Medical Department.

(*a*) MEDICAL BRANCH.

European Staff.

Promotions :—

Drs. David Duff, D.M.S.S. ; Phillip D. Oakley, D.D.M.S. ; and Miss M. L. Brown, Senior Nursing Sister.

Appointments :—

Misses Sarah Bentley, Nursing Sister ; E. M. Robinson, Nursing Sister ; D. A. Callaway, Nursing Sister ; H. J. Reid, Nursing Sister ; D. I. Gearing, Nursing Sister ; G. L. Patten, Nursing Sister ; and A. M. Pearton, Nursing Sister.

Transfers :—

Drs. P. S. Selwyn-Clarke, from Malay States to Gold Coast as A.D.M.S. ; N. A. Dyce Sharp, from Nigeria as S.M.O. ; M. M. McDowall, Woman Medical Officer, from Sierra Leone ; S. G. Harrison, Medical Officer, from Gambia ; G. L. Alexander, Medical Officer, from Sierra Leone ; Miss T. Grant, Nursing Sister, from Gambia.

Retirements :—

Drs. W. J. D. Inness, C.M.G., D.M.S.S. ; G. Hungerford, D.D.M.S.S. ; E. F. Ward, Senior Medical Officer ; F. H. Cooke, Medical Officer ; Grace M. L. Summerhayes, Woman Medical Officer ; M. B. D. Dixey, Medical Officer ; A. Reid, Medical Officer ; Dorothy E. Stewart, Woman Medical Officer ; Mr. John Campbell, Government Dentist ; Mr. A. E. Oldfield, Secretary to D.M.S.S. ; Misses M. E. Howard, Nursing Sister ; N. E. Pearce, Nursing Sister ; Ellen M. Catton, Nursing Sister ; Peggy Stewart, Nursing Sister ; E. M. Robinson, Nursing Sister.

African Staff.

Promotions :—

Dr. C. J. S. O. Taylor, African Medical Officer ; Mr. W. S. Forson, 1st Division Dispenser ; 2nd Division Dispensers :—Messrs. G. Q. Ofosu ; J. D. Abran-Akuaku ; R. Bruce Addy ; J. A. Brown ; H. K. Wellington. 2nd Division Nurses :—Messrs. Joseph Cudjoe ; D. C. Moncar ; Frank Obeng ; J. K. O. Nyumutei ; H. F. M. Johnson ; J. Q. Dodoo ; Nathan A. Patterson ; Misses Diana L. Mills ; Elizabeth Lamptey ; Lucy Afriwo Alar.

Appointments :—

Nurses-in-Training :—Forty-five.

Mental Nurses :—Two.

Midwives-in-Training :—Misses Christiana Agnes Lokko ; Kate Oye Koranteng ; Cathynca Violet Bruce ; Constance Afiwa Acolatse ; Kate Armah Koranteng ; Grace Akoto Lamptey ; Beatrice Anobi.

Retirements :—

Messrs. T. Hansen Quao, 1st Division Dispenser ; T. E. Nartey, 2nd Division Dispenser ; Kwami Augustus Ofosu, 2nd Division Dispenser ; Miss Sarah Dicks, 1st Division Nurse ; Messrs. B. E. Tamakloe, Laboratory Attendant ; William Appiah, 2nd Division Nurse ; W. G. Amartey, 2nd Division Nurse ; Miss Mary Artherton, 2nd Division Nurse ; Messrs. T. Y. Owuani, 2nd Division Nurse ; A. C. Heyman, 2nd Division Nurse ; D. C. Okai, 2nd Division Nurse ; H. L. Matti, Mental Nurse ; (death).

Thirty-four Nurses-in-Training.

Two Midwives-in-Training.

(*b*) HEALTH BRANCH.

European Staff.

Appointments :—

Nil.

Other changes in the Staff during the year :—

Dr. J. M. Mackay, Assistant Director of Health Service was transferred to Nigeria and the post placed in abeyance.

Mr. J. T. Wilkie, Superintending Sanitary Inspector, had his appointment terminated.

Mr. E. G. Gray, Superintending Sanitary Inspector, died.

Mr. H. A. Browning, Superintending Sanitary Inspector, died.

Mr. W. J. Getgood, Superintending Sanitary Inspector, resigned.

African Staff.

Promotions :—

Mr. A. E. Bonney, 1st Division Sanitary Inspector.

Appointments :—

One Second Division Clerk.

Nine Midwives.

Seven Nurses-in-Training.

Other changes in the Staff during the year :—

One First Division Clerk, One First Division Sanitary Inspector and three Second Division Sanitary Inspectors retired on pension.

Five Nurses-in-Training resigned.

Two Second Division Sanitary Inspectors died.

One Second Division Clerk was dismissed.

(*c*) LABORATORY BRANCH.

No changes.

ORDINANCES AFFECTING THE PUBLIC HEALTH.

The following are the more important additions or amendments to public health legislation in the Gold Coast Colony and its Dependencies during the year :—

1. An Ordinance for the training and registration of Midwives and to regulate their practice, and Rules made thereunder.
2. Amendment to the Towns Ordinance defining "House" to include "School."
3. Orders in Council under the Towns Ordinance applying its provisions to the town of Bukunaw and defining the boundaries of Bukunaw, Odumasi and Kibi.

FINANCE.

The total revenue earned by the Medical Department (all branches) during the financial year 1931–32 amounted to £34,658 as compared with £36,412 in 1930–31.

The total Ordinary (i.e. Recurrent) Expenditure for the Colony was £2,700,469.

The total Ordinary (i.e. Recurrent) Expenditure for Medical Services (all Branches) was £320,144 as compared with £369,083 in 1930–31. This figure is exclusive of the cost of buildings, e.g., hospitals, dispensaries, etc., and other public health works such as water supplies, town improvements, etc.

The ratio of the Ordinary Expenditure on Medical Services to the Total Expenditure of the Colony was 11.73 per cent as compared with a ratio of 11.85 per cent last year.

A detailed Financial Statement for the year appears at Table II of the Returns.

The following table shows the Ordinary (Recurrent) Expenditure under the Heads Medical, Health and Research over five years, as compared with the Total Ordinary (Recurrent) Expenditure for the Colony :—

Branch.	1927–28 (Actual).	1928–29 (Actual).	1929–30 (Actual).	1930–31 (Actual).	1931–32 (Actual).	1932–33 (Estimated).
	£	£	£	£	£	£
Medical	155,620	173,147	190,083	195,450	166,572	164,689
Health	93,393	119,427	151,123	154,986	139,083	132,592
Research	12,371	14,230	17,088	18,647	14,489	8,666
Total	£261,384	306,804	358,294	369,083	320,144	305,947
Total (Colony)	£2,374,087	2,553,423	2,692,012	2,872,385	2,700,469	2,608,168
Percentage of total to Colony Total	11%	12%	13.3%	12.84%	11.85%	11.73%

II.—PUBLIC HEALTH.

(*a*) General Remarks.

The following table shows the most noteworthy contrasts in the returns of diseases treated by the Medical Branch only during the years 1929–30, 1930–31, and the period under review :—

Diseases.	1929–30.		1930–31.		1931–32.	
Small-pox	7		25		3	
Varicella (Chicken-pox)	235		211		534	
Dysentery :—						
(*a*) Amoebic	1,006		735		717	
(*b*) Bacillary	209	1,550	313	1,273	183	1,143
(*c*) Undefined or due to other causes ...	335		225		243	
Enteric Group :—						
(*a*) Typhoid Fever	39		55		23	
(*b*) Para-typhoid A	4		6		3	
(*c*) Para-typhoid B	1	51	3	71	3	35
(*d*) Para-typhoid C	—		—		1	
(*e*) Type not defined	7		7		5	
Influenza	695		396		1,257	
Malaria :—						
(*a*) Tertian	1,264		1,946		1,610	
(*b*) Quartan	45		53		40	
(*c*) Aestivo-autumnal	6,395	10,562	9,366	12,930	7,396	10,484
(*d*) Cachexia	221		334		215	
(*e*) Blackwater	24		18		28	
(*f*) Unclassified	2,613		1,213		1,195	
Measles	219		303		310	
Pneumonia :—						
(*a*) Broncho-Pneumonia	1,378		305		798	
(*b*) Lobar-Pneumonia	1,227	2,708	682	1,199	524	1,456
(*c*) Unclassified	103		212		134	
Trypanosomiasis (Sleeping Sickness) ...	121		224		250	
Whooping Cough	250		517		374	
Alcoholism	19		22		11	
Yellow Fever	—		2		26	
Tuberculosis :—						
(*a*) Pulmonary and Laryngeal ...	939	1,175	916	1,149	962	1,180
(*b*) Other forms	236		233		218	
Plague :—						
(*a*) Bubonic	—		—		—	
(*b*) Pneumonic	—		—		—	
(*c*) Septicæmic	—		—		—	
(*d*) Undefined	—		—		—	
Ankylostomiasis	147		184		179	

COMPARATIVE FIGURES FOR FOUR YEARS, 1928–29, 1929–30, 1930–31, 1931–32, FOR ALL PATIENTS TREATED IN HOSPITALS AND DISPENSARIES OF THE MEDICAL BRANCH.

Year.	Remaining in hospital.	Total cases treated (in and out-patient).	Deaths.	Remaining in hospital.	Percentage of deaths to total patients treated.
1928–29 ...	601	177,594	1,009	678	.57
1929–30 ...	678	184,424	1,156	849	.63
1930–31 ...	786	213,708	1,176	816	.55
1931–32 ...	816	198,205	1,186	811	.59

HEALTH OF THE GENERAL EUROPEAN COMMUNITY.

The general health of the European Community was not unsatisfactory, although it was not so good as in recent years. This is evident from a study of the Tables of Vital Statistics (pages 10 to 15).

The outbreak of Yellow Fever, which will be referred to later, had much to do with this. Of the deaths of officials especially, Yellow Fever accounted for four. Invalidings and Deaths of officials were the highest since 1925–26, and of non-officials, Invalidings and Deaths were the highest since 1926–27. The Deaths, however, were only slightly above the average of the ten-year period 1922–32.

The effect of financial depression has imposed an extra strain on all Europeans, and this cannot but have had an adverse influence on their general health and welfare.

HEALTH OF THE GENERAL AFRICAN COMMUNITY.

The health of the African Community during the year remained fairly good. There was an absence of serious epidemics which in years past have so often swept away numbers in a comparatively short period. On the other hand, owing to trade depression and low prices, there was less money to be earned, and this to the sturdy labourer from the Northern Territories has meant that less food could be obtained by him on his return to his home in the " hungry " season. The strain of under-nourishment has in consequence told more severely on this class than it has for many years.

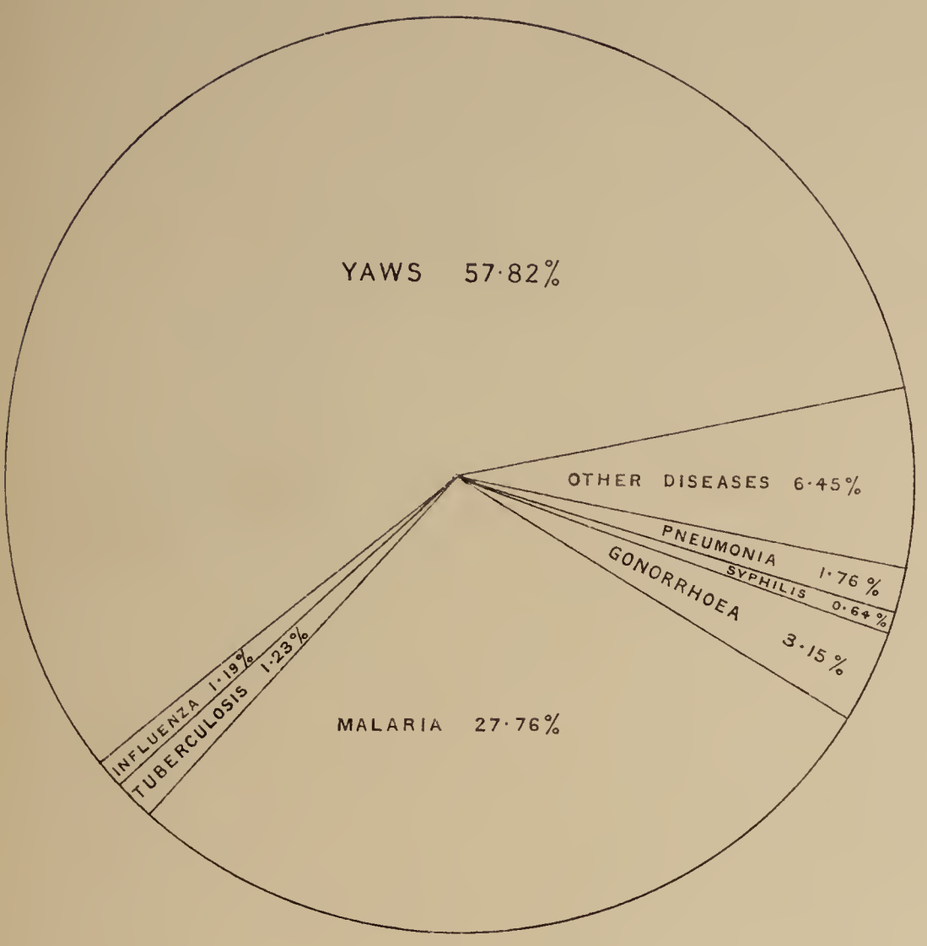
For the first time in the recent history of the Department there has been a decrease in the numbers of patients treated in the Hospitals and Dispensaries of the Medical Branch. The decline was 7.25 per cent on last year's figures which had shown a rise of nearly 16 per cent on the previous year's, but even now the figure for the year under review is more than double that for 1925–26.

The following table gives the relevant figures :—

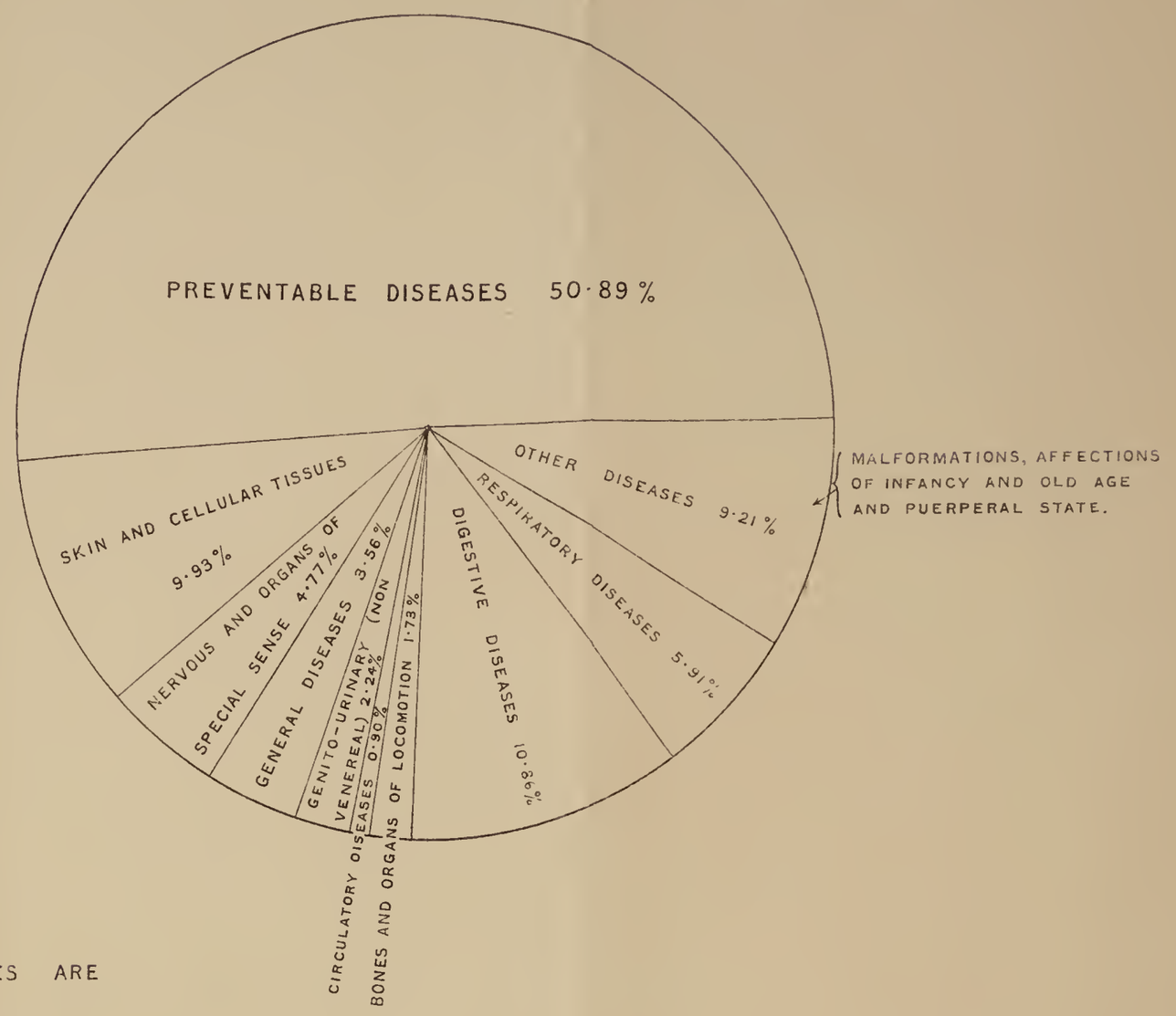
Year.	Total cases treated in hospitals and dispensaries by Medical Branch only.	Percentage increase or decrease on previous year.
1925–26	97,910	—
1926–27	105,300	+ 7.5
1927–28	133,069	+26.42
1928–29	177,594	+32.65
1929–30	184,424	+ 3.84
1930–31	213,708	+15.88
1931–32	198,205	— 7.25

The fall in numbers is probably due to several factors but must be attributed in the main to the heavy reduction in the staff of ordinary Medical Officers, which was reduced from 48 (authorised) in 1929–30 to 36 (authorised) in 1931–32.

INFECTIVE DISEASES TOTAL INCIDENCE 108,166.

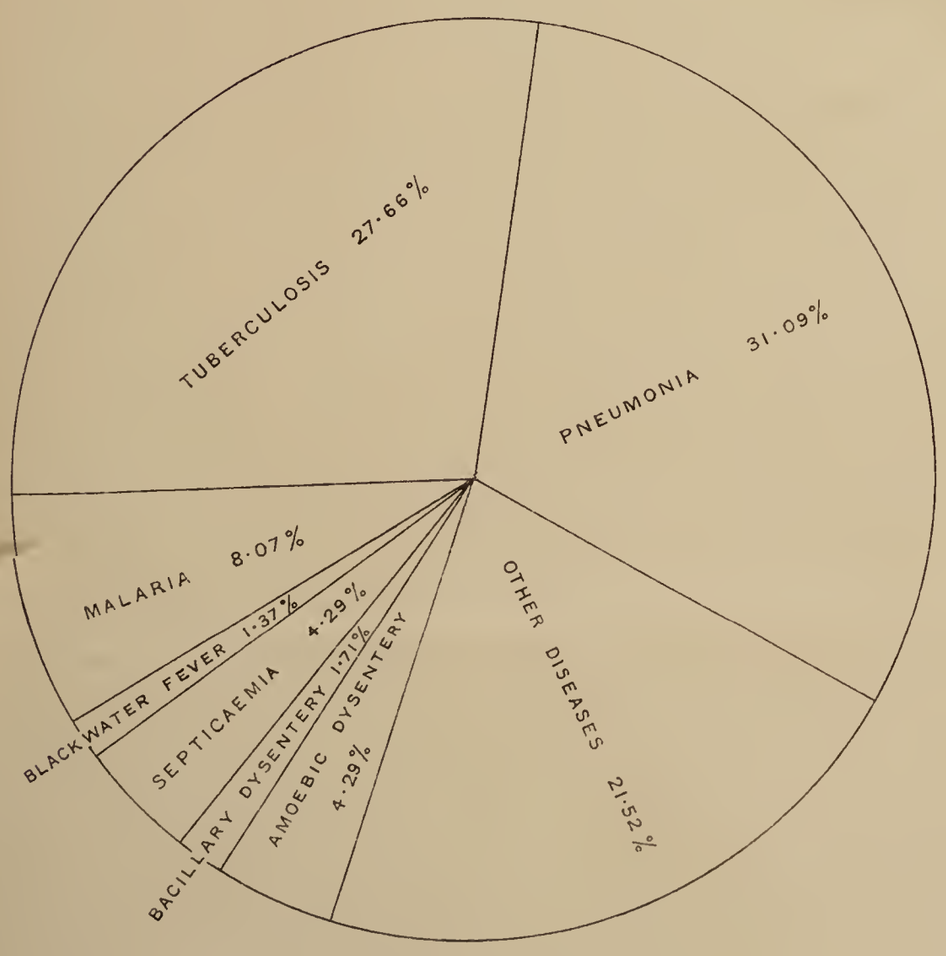


GENERAL SYSTEMIC AND PREVENTABLE DISEASES TOTAL INCIDENCE 259,067.

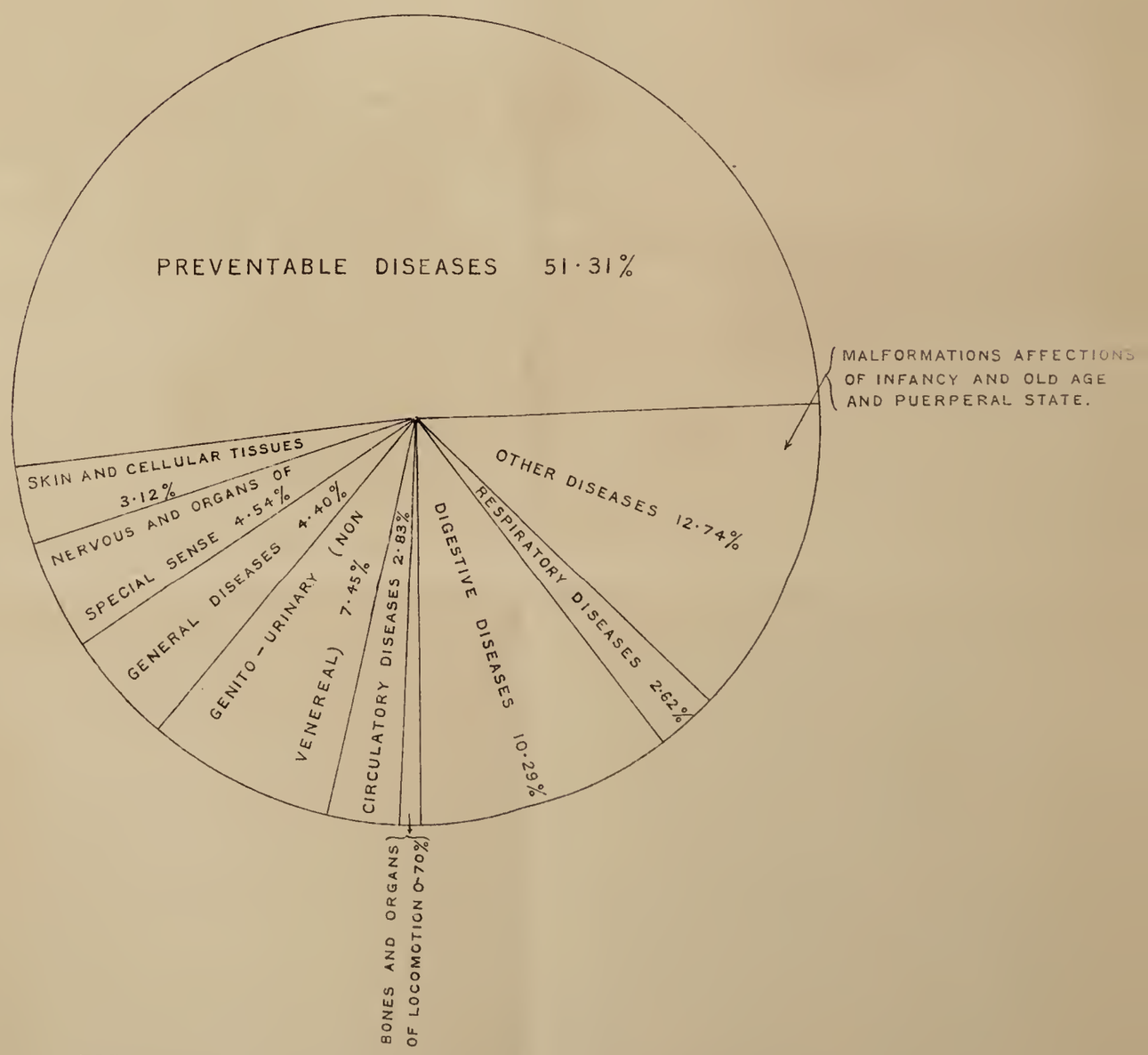


PREVENTABLE DISEASES ARE

(1) INFECTIOUS DISEASES
(2) INTOXICATION AND POISONS
(3) SCABIES AND TINEAE
(4) HELMINTHS
(5) AFFECTIONS PRODUCED BY EXTERNAL CAUSES.



TOTAL DEATHS = 582 = ·53% OF TOTAL INCIDENCE.



TOTAL DEATHS = 1409 = ·54% OF TOTAL INCIDENCE.

SURVEY H Q ACCRA, 1932

The following Table will show the actual numbers of Medical Officers of the West African Medical Staff below the rank of Senior Medical Officer during the past four years and as authorised for the year 1932–33. The authorised Establishment appears in brackets :—

	1928–29.	1929–30.	1930–31.	1931–32.	1932–33.
Medical Officers	43 (46)	42 (46)	39 (42)	33 (33)	(35)
Medical Tutor (Nurse-Dispenser scheme)	—	—	—	1 (1)	— (Post abolished) one M.O. added to staff of M.O.s.
Leprosy Officer (Local Secretary, British Empire Leprosy Relief Association).	1 (1)	1 (1)	1 (1)	1 (1)	— (One M.O. added to staff of M.O.s.)
Alienist Officer*	—	1 (1)	1 (1)	1 (1)	(1)
Total	44 (47)	44 (48)	41 (44)	36 (36)	(36).

*Note.—This officer's functions were formerly performed by an ordinary Medical Officer.

It is worth noting that the reduction in the staff of ordinary Medical Officers has resulted in a fall of only 7.25 per cent in the total numbers treated. The burden of dealing with the numbers coming forward for treatment has obviously not lightened but rather increased for the already very hard worked Medical Officers remaining.

Part of the fall has also corresponded with the growth of the work of the Infant Welfare Centres of the Health Branch. In those towns in which these Centres have been established the fact that a comparatively large proportion of the women and children seek treatment for Yaws, Malaria, Helminths, etc., has merely meant that so many cases have been diverted from the Medical to the Health Branch of the Department. Trade depression has naturally been another important cause of fall in numbers owing to the restricted demand for labour and consequent immigration from French Territory. In Tamale quarantine restrictions for Yellow Fever continued for several months and this reduced out-patient attendances by some thousands. The establishment of two private practitioners in Kumasi has to a small extent relieved the pressure on the out-patient department there. The opening of the excellent Hospital at Agogo by the Basel Mision has acted in the same way, the drop in the figures for in-patients and out-patients at Kumasi corresponding very closely with the numbers treated at Agogo.

It is, however, in the outlying areas that the effect of a reduced staff has been most severely felt. Not only were Medical Officers withdrawn from Bekwai, Bawku, Wioso, Mpraeso and Kete Krachi, but Salaga, Kibi, Sunyani and even Saltpond were deprived of the services of a Medical Officer for varying periods. This curtailment of ordinary medical services involved a corresponding reduction in the health services in these areas. The brunt of the economy measures fell therefore with a very serious double effect on the more remote stations where the Medical Officer must perform the dual function of Medical Officer and Health Officer.

I.—GENERAL DISEASES.

Beri-beri continues to shew about 15 to 20 cases a year, a figure in notable contrast with those of former years such as of 1913 when 114 cases were recorded.

The incidence of Cancer remains almost the same.

II.—COMMUNICABLE DISEASES.

(1) Mosquito or Insect-borne.

Malaria.

The following Table (which should be read in conjunction with Table 3 on page 11) shews the percentage of all cases treated over a five year period :—

Statistics over the Five-year Period, 1927–32.

	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.
Total treated	8,955	10,002	10,562	12,930	10,484
Percentage of all cases treated	6.72	5.63	5.73	6.05	5.28

Blackwater Fever.

The incidence of Blackwater Fever in Europeans during the last four years is shown in the following table which allows comparison to be made with the two five-year periods 1917–21 and 1923–28 :—

Period.	Percentage of cases in Europeans to total European residents.	Percentage of deaths to cases.
Five year period. 1917–21	.89	35.3
Five year period. 1923–28	.47	23.7
1928–29	.16	16.6
1929–30	.40	13.33
1930–31	.42	13.33
1931–32	.62	21.05

The following table shewing the incidence of and deaths from Blackwater fever in each race for the past three years is of interest :—

	1929–30.		1930–31.		1931–32.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Europeans	15	2	15	2	19	4
Syrians	5	2	1	0	3	1
Indians	2	0	0	0	0	0
Africans	3	2	2	2	6	3

Trypanosomiasis.

Trypanosomiasis on the Gold Coast is characterised by its comparative mildness, although some Medical Officers hold that mania may be one of the very earliest observed symptoms. Its general mildness is borne out by the fact that of the 14 cases seen at Tamale all recovered under treatment, whilst an appreciable proportion of the 67 cases recorded at Kumasi were only discovered during routine blood examinations in patients undergoing treatment for other conditions. In cases of mania and insanity brought in by Police from outlying villages in the Northern Territories, it is not uncommon to find infection with trypanosomes, and dramatic recoveries from the mental condition have at times occurred in those who have been treated with Tryparsamide or Bayer 205.

It is a remarkable fact that the areas in the Northern Territories and Ashanti to the north and south of the Black Volta are very thinly populated. Many officers consider that this is due to the continued drain of ill-health and death caused by the disease. In a recent article in the *West African Medical Journal*

(January, 1932) Saunders and Morris concluded that the original depopulation of these areas was brought about by Ashanti raids although the disease may have contributed in maintaining the resulting scarcity of people.

The numbers treated and case incidence have risen slightly during the year as may be seen by the following table :—

Year.	Cases.	Deaths.	Incidence per 10,000 of all cases treated.	Percentage of Deaths to cases.
1927–28	59	4	4.43	6.78
1928–29	94	18	5.29	19.14
1929–30	121	23	6.56	19.00
1930–31	224	16	10.47	7.14
1931–32	250	28	12.10	11.2

It is very doubtful if the increase is a true one or only due to an increase in the numbers applying for treatment or in the numbers diagnosed. In any event the disease cannot be regarded as a menace to the remainder of the population.

Yellow Fever.

This disease from which the Gold Coast was so happily free during the previous year, appeared again in epidemic form. For the first time on record the main outbreak occurred in the Northern Territories, especially in the Tamale area. Details of the outbreak are recorded in Section III (Hygiene and Sanitation).

2. Infectious Diseases.

Smallpox.

There were 201 cases with 16 deaths. *See* Section III (Hygiene and Sanitation) for further details.

Dysentery.

There were 1,143 cases of dysentery reported as compared with 1,273 for last year. The present figures show 41 deaths, giving a case mortality of 3.5 per cent which is slightly higher than for last year.

Year.	Case incidence.	Case mortality.
1927–28	.76 Per cent.	4.2 Per cent.
1928–29	.92 do.	2.9 do.
1929–30	.84 do.	2.4 do.
1930–31	.54 do.	3.1 do.
1931–32	.57 do.	3.5 do.

Enteric Group.

The figures for this group dropped to less than half of those of last year, i.e. 35 cases as against 71, and are difficult to explain. Steps were taken during the year to bring to the notice of all European officials the high value of anti-typhoid inoculation and to induce them to accept it. Similar steps will be taken to keep merchants and missionaries well informed of its worth.

Pneumonia.

The number of cases recorded is somewhat larger than for last year, but deaths were fewer. The mortality rate returned to 10 per cent which was the average rate of the past five years.

Year.	Case incidence.	Case mortality.
	Per cent.	Per cent.
1927–28	.73	10.32
1928–29	.87	11.3
1929–30	1.47	6.1
1930–31	.56	12.01
1931–32	.73	10.09

Tuberculosis.

Five more cases were recorded than in 1929–30. The incidence of this disease varies little as the following table shows :—

Year.	Number of cases.	Case incidence.
1923–24	411	.53
1924–25	414	.50
1925–26	571	.58
1926–27	698	.66
1927–28	910	.68
1928–29	1,151	.65
1929–30	1,175	.64
1930–31	1,149	.54
1931–32	1,180	.59

There was an increase in some areas and a corresponding decrease in others.

The chief focus is situated in the mining area and the Senior Health Officer noted that 25 per cent of all registered deaths in Tarkwa in males were due to Pulmonary Tuberculosis. If death registration were general throughout the country there might be cause for alarm at a death rate of 12 per cent which was the figure for all male deaths registered in the Colony. But at present registration is confined to only about 30 of the towns in the Colony (and even in these the figures are unreliable), and these towns are centres where overcrowding and unsuitable dieting exist and are most likely to favour spread. They contain less than one-twelfth of the population of the whole country and one would expect to find in them a higher incidence of Pulmonary Tuberculosis than in the rural areas in which the bulk of the population resides.

There is no evidence of an increased incidence of the disease in the whole Colony, but cases are being noted more widely than heretofore. Increased transport facilities are doubtless a contributing factor.

At Appendix C will be found a report on 100 consecutive cases treated at the Gold Coast Hospital, Accra.

Venereal Diseases.

The cases treated during the year are shown below together with those of the previous four years :—

	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.
Gonorrhoea	3,356	4,809	4,110	4,059	3,270
Syphilis	1,802	3,434	1,553	1,018	621
Chancroid	295	419	431	235	318

The following table shows the percentages of gonorrhoea, syphilis and yaws of the total of all diseases treated by the Medical branch over a five-year period :—

	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.
Gonnorhoea	2.65	2.85	2.24	1.90	1.64
Syphilis	1.33	1.58	.86	.47	.31
Yaws	19.19	24.68	22.82	26.54	26.37
All other diseases	76.83	70.89	74.18	71.09	71.68

From these figures it would appear as if the incidence of gonorrhoea was declining. This is not the view taken by most Medical officers, one of whom gives his opinion for his own area that " one would probably be right in assuming that most of the adult males have gonorrhoea." Another Medical Officer after stating his view on the prevalence of the disease remarks naïvely :—" gonorrhoea is all that is left to remind them of their former days of prosperity. This they prefer to

take to the Oman Council in the hope of obtaining pecuniary solace rather than to the Medical Officer for cure," meaning thereby that they prefer to sue the infecting party for damages before the native tribunal.

There would appear to be general agreement amongst Medical officers that there is a real decrease in syphilis. It is difficult to be quite certain of this, but the constant use of Bismuth and N.A.B. in the chief centres can surely not be without some effect on incidence by reducing infectivity.

Leprosy.

The economic depression has affected adversely all plans for the extension of Leper Settlements. One must await a return of financial prosperity before any important schemes can be considered.

At Appendix B will be found a Note on the Settlement at Ho. The Mission of the White Fathers at Navrongo has undertaken to maintain a small settlement near their station. The buildings were completed at the close of the year.

Despite the patient and determined efforts of many Medical officers to organise regular treatment on orthodox lines, reports received are for the most part disappointing. The absence of rapid and dramatic amelioration of symptoms following injections such as is constantly witnessed in the case of yaws leads to discouragement and disbelief in treatment and after a few months trial the sufferer drifts away.

The report of the Medical Officer of Health, Kumasi, which is included as an Appendix to the report of the Health branch will be found of interest, *vide* page 99.

The observation made in a previous report that the problem of Leprosy is intimately bound up with the problem of raising the whole standard of living of the tribes chiefly affected may again be stressed. Unless the standard can be raised special measures are bound to be seriously handicapped.

Ascaris.

Unlike the ankylostome, ascaris causes very extensive morbidity in children and a very definite mortality. It is perhaps one of the largest factors in infant mortality as an associate of malaria and as a precursor of respiratory disease. The figures given in this report give only a faint indication of its prevalence for it is rarely the sole condition for which treatment is sought.

Schistosomiasis.

Five hundred and eighteen cases were treated as against 500 last year. In some areas it is confused with gonorrhoea and treatment is not therefore sought until the disease is well established. It is peculiar that vesical calculus is very rarely seen in West Africa. At the Gold Coast Hospital, Accra, of 2,337 urines examined 110 showed ova of schistosoma haemotobium.

Dracontiasis.

One thousand four hundred and sixty cases were reported, an increase of 92 on last year's figure.

These figures give no real indication of its prevalence or of the vast amount of invalidism caused.

Yaws.

From the table submitted above under the heading "Venereal Diseases" it will be seen that in 1930–31 26.54 per cent of all cases treated by the Medical branch were yaws.

For the year under review almost the same percentage obtained, viz. 26.37 per cent.

The Health branch has been treating women and children in certain areas and their figures swell the total number treated to over 62,000 for the two branches.

The advantages and disadvantages of N.A.B. as compared with cheap Bismuth preparations in the control and cure of yaws have been specially reported on by all Medical officers throughout the Colony. The balance of opinion was against too much reliance being placed on Bismuth preparations alone. All officers agreed that until a standard of cure had been clearly defined and accepted no sound opinion as to the curative value of either preparation could be given. The general opinion was that Bismuth preparations were less likely to be ultimately curative and more liable to cause stomatitis and other toxic symptoms. Their immense advantage was their cheapness.

Ulcers.

During the year 11,556 cases were treated, a decline of not less than 4,000 on the previous year's figures. This probably represents the reduction in the number of poor inhabitants from French country who pour in from the North in times of prosperity in order to obtain work on the cacao-farms in Ashanti and the Colony.

Rabies.

No human case of Rabies was treated during the year though rumours of such cases occurring in rural areas arose from time to time.

There were outbreaks in dogs in Accra, Abuii, Kumasi and Tamale. In Tamale a dog subsequently proved to be infected bit a patient, a nurse and a labourer before it was finally destroyed. These three persons were at once treated with anti-rabic vaccine as were several other persons bitten elsewhere by infected dogs. In order that fresh vaccine may always be available, the Colony's stock is kept regularly renewed.

The value of this is known and appreciated in French Togoland. On more than one occasion Frenchmen from there have come to Accra for a course of preventive treatment.

Snake-bite and Fitzsimons Anti-venom Serum.

This serum has again proved its great worth.

In Section IX (*c*) two cases are recorded in which the injection of Serum was followed almost immediately by a cessation of haemolytic symptoms.

Seasonal Incidence of Disease during the year.

The period from May to July which corresponded approximately to the rainy season was attended by the largest number of deaths from All Causes, whilst the last four months of the calendar year were the most healthy judged by the number of recorded deaths.

The rainy season is certainly attended by the breeding out of large numbers of Anophelines and as Malaria is an important cause of death the association cannot be entirely accidental.

Registered deaths from Malaria were most common in June in Accra, Cape Coast and Kumasi and in April and May in Koforidua and Sekondi respectively.

Registered deaths from Respiratory Diseases were most common in May in all stations except Cape Coast where they were more numerous in June.

Similarly Intestinal Diseases were most fatal in the month of May in Accra and Koforidua, in April in Cape Coast, and in July and October in Kumasi and Sekondi respectively.

(*b*) VITAL STATISTICS.

General European Population.

1. Table shewing Actual Number of Residents.

	1929–30.	1930–31.	1931–32.
(i) Government Officials	1,323	1,313	1,076
(ii) Employees of trading firms	1,723	1,519	1,365
(iii) Employees of Mining Companies ...	467	453	371
(iv) Missionaries	180	223	235
Total	3,693	3,508	3,047

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FURTHER CORRIGENDA.

Annual Medical Report for 1931-32.

Page 11, Table 2, in line 2 for 719 read 819.

Consequently in line 6 for 2.56 read 2.25.

Consequently in line 8 for 9.39 read 8.24.

Consequently in line 11 for 8.06 read 7.08.

Consequently in line 14 for 0.97 read 0.85.

Page 11, Table 3, in last line for 719 read 819.

Page 11, Table 3, in last line for 192 read 168.

Page 12, Table 7, in last line for 719 read 819.

Page 12, Table 7, in last line for 8.06 read 7.08.

Page 12, Table 7, in last line for .97 read .85.

A decrease of 237 Government officials over the previous year took place and a decrease of 224 non-officials.

A.—EUROPEAN OFFICIALS.

2. Table shewing Sick, Invaliding and Death Rates for Past Three Years.

	1929–30.	1930–31.	1931–32.
Total number of officials resident	1,323	1,313	1,076
Average number resident	972	936	719
Total number on the sick list	912	799	752
Total number of days on sick list	7,795	7,961	6,755
Average daily number on sick list	21.3	21.81	18.45
Percentage of sick to average number resident ...	2.19	2.32	2.56
Average number of days on sick list for each patient	8.54	9.96	8.98
Average sick time to each resident	8.02	8.50	9.39
Total number invalided	49	49	58
Percentage of invalidings to total residents ...	3.70	3.73	5.39
Percentage of invalidings to average number resident	5.04	5.22	8.06
Total deaths	5	3	7
Percentage of deaths to total residents	0.37	0.22	0.65
Percentage of deaths to average number of residents	0.51	0.32	0.97
Number of cases of sickness contracted away from residence	Not available	Not available	Not available.

3. Table shewing Total Days Sick with special Reference to Malaria.

Year.	Average No. resident.	Total sick days.	Total days on sick list for malaria.	Total days on sick list for other diseases.	Percentage of days lost through malaria to total days lost.	No. of days lost through malaria for the year per 100 residents.
1924–25 ...	680	8,614	1,746	6,868	20.26	256
1925–26 ...	761	6,108	1,547	4,561	25.32	203
1926–27 ...	783	6,847	1,204	5,643	17.58	153
1927–28 ...	835	7,023	1,530	5,493	21.81	183
1928–29 ...	881	7,177	1,661	5,516	23.14	188
1929–30 ...	972	7,795	1,920	5,875	24.63	197
1930–31 ...	936	7,961	1,610	6,351	20.22	172
1931–32 ...	719	6,755	1,381	5,374	20.44	192

Separate records of Invalidings and Deaths have been kept for Class "A" and Class "B" officials.

Too much significance must not be attached to these figures which are a reversal of those of last year. Nevertheless the "B" Class Death rate of 2.26 per cent is regretably high and recalls the total death rate in 1921 of all officials which rose to 2.28.

4. Table contrasting Invaliding Rate of "A" and "B" Officials.

	Class "A."				Class "B."			
Year.	Average number resident.	Invaliding.	Rate per 1,000.	Rate per cent.	Average number resident.	Invaliding.	Rate per 1,000.	Rate per cent.
1930–31 ...	653	36	55.13	5.51	283	13	45.93	4.59
1931–32 ...	598	32	53.51	5.35	221	26	117.64	11.76

5. Table Analysing Invaliding by Residential Service and Leave Conditions.

Serving under.	Under 6 months.	6 but under 9	9 but under 12	12 but under 15	15 but under 18	18 months and over.	Total.
Old Leave Regulation	2	1	—	—	—	—	3
New Leave Regulation	11	3	8	13	18	2	55

6. Table contrasting Death Rate of "A" and "B" Officials.

Class "A."					Class "B."			
Year.	Average number resident.	Deaths.	Death-rate per 1,000.	Death rate per cent.	Average number resident.	Deaths	Death rate per 1,000.	Death rate per cent.
1930–31 ...	653	3	4.59	.46	283	0	0	0
1931–32 ...	598	2	3.34	.33	221	5	22.62	2.26

7. Table shewing Invaliding and Death Rates over Ten Year period based on the Average Number Resident.

Year.	Average number resident.	Total invalided.	Percentage invalided.	Total died.	Perentage died.
April, 1922—March, 1923	719	30	4.17	6	.83
1923–24	689	32	4.65	10	1.45
1924–25	680	58	8.52	7	1.02
1925–26	761	59	7.75	8	1.05
1926–27	783	49	6.26	3	.38
1927–28	835	39	4.67	6	.71
1928–29	881	50	5.67	4	.45
1929–30	972	49	5.04	5	.51
1930–31	936	49	5.22	3	.32
1931–32	719	58	8.06	7	.97
Average for the period	797.5	47.3	6.01	5.9	.76

Causes of **Invalidings** of European Officials during the Period 1931–1932.

Psycho-neurosis	8	Malaria	3
Blackwater fever	3	Yellow fever	2
Debility	6	Boils	4
Local injuries	3	Fracture	2
Epilepsy	2	Duodenal ulcer	2
Alcoholism	2	Appendicitis	2
Nasopharyngal catarrh	2	Anaemia	1
Climatic bubo	1	Epidydimitis	1
Diabetes	1	Gastritis	1
Arthritis	1	Enteritis	1
Insomnia	3	Paratyphoid	1
Femoral hernia	1	Cystitis	1
Phlebitis	1	Filarial Adenitis	1
Heart block	1	Trypanosomiasis	1

Total 58.

Of the 58 officials invalided four were military.

Causes of **Deaths** of European Officials during the Period 1931-32.

Yellow fever	4	Pneumonia	1
Cyanide poisoning	1	Compound fracture	1

Total 7.

Of the seven officials who died one was military.

B.—EUROPEAN NON-OFFICIALS.

8. TABLE SHEWING INVALIDING AND DEATH RATES FOR THE PAST THREE YEARS. (*N.B.*—Wives of officials appear under Merchants, Females.)

1929–30.		Number.	Deaths.	Invalided.	Death rate per cent.	Invaliding rate per cent.
Merchants	Males	1,313	12	24	.91	1.82
	Females	410	3	—	.73	—
Mining Companies	Males	451	3	24	.66	5.32
	Females	16	—	—	—	—
Missionaries	Males	112	—	1	—	.89
	Females	68	1	1	1.47	1.47
Totals		2,370	19	50	.80	2.10
1930–31.						
Merchants	Males	1,139	9	17	.79	1.49
	Females	380	1	4	.26	1.05
Mining Companies	Males	438	5	7	1.14	1.59
	Females	15	—	—	—	—
Missionaries	Males	135	—	6	—	4.44
	Females	88	—	—	—	—
Totals		2,195	15	34	.68	1.54
1931–32.						
Merchants	Males	935	12	13	1.28	1.39
	Females	430	2	6	.46	1.39
Mining Companies	Males	357	3	12	.84	3.35
	Females	14	—	—	—	—
Missionaries	Males	142	1	7	.70	4.92
	Females	93	—	5	—	5.37
Totals		1,971	18	43	.91	2.13

9. TABLE SHEWING INVALIDING AND DEATH RATES OVER TEN YEAR PERIOD BASED ON TOTAL NUMBER RESIDENT AND CONTRASTING WITH OFFICIALS.

	NON-OFFICIALS.			OFFICIALS.		
Year.	Total Number resident.	Percentage Invalided.	Percentage died.	Total Number resident.	Percentage Invalided.	Percentage died.
1922–23 ...	2,019	2.27	1.23	979	3.06	.61
1923–24 ...	2,049	2.68	.68	994	3.21	1.00
1924–25 ...	2,020	3.26	.59	846	6.85	.82
1925–26 ...	2,110	3.12	.66	994	5.93	.80
1926–27 ...	2,435	2.66	.94	1,046	4.68	.28
1927–28 ...	2,375	2.02	.88	1,202	3.24	.49
1928–29 ...	2,328	1.33	.94	1,280	3.90	.31
1929–30 ...	2,370	2.11	.80	1,323	3.70	.37
1930–31 ...	2,195	1.54	.68	1,313	3.73	.22
1931–32 ...	1,971	2.13	.91	1,076	5.39	.65
Average for the period ...	2,187.2	2.31	.83	1,105.3	4.36	.55

CAUSES OF **Invalidings** OF NON-OFFICIALS DURING THE PERIOD 1931–1932.

Malaria	5	Blackwater fever	3
Debility	4	Psychoneurosis	5
Pregnancy	2	Dysentery...	2
Pulmonary tuberculosis	2	Abscess	5
Cystitis	2	Delusional insanity	1
Myocarditis	1	Menorrhagia	1
Trypanosomiasis	1	Climatic bubo	1
Abdominal tumour	1	Gastritis	1
Paratyphoid	1	Pleurisy	1
Anaemia	4		

Total 43.

CAUSES OF **Deaths** OF NON-OFFICIALS DURING THE PERIOD 1931–32.

Malaria	3	Blackwater fever	4
Yellow fever	2	Broncho-pneumonia	2
Cellulitis	1	Septicaemia	2
Influenza	1	Ruptured aneurism	1
Suicide by hanging	1	Lymphatic leukaemia	1

Total 18.

C.—AFRICAN OFFICIALS.

10. TABLE SHEWING SICK, INVALIDING AND DEATH RATES FOR THE PAST THREE YEARS.

	1929–30.	1930–31.	1931–32.
Total number of officials resident	4,474	4,775	4,994
Average number resident	4,154.22	4,451.02	4,576.4
Total number on sick list	1,260	1,175	1,316
Total number of days on sick list	13,176	12,691	14,190
Average daily number on sick list	36.09	32.03	33.77
Percentage of sick to average number resident	0.86	0.72	0.84
Average number of days on sick list for each patient ...	10.45	10.80	10.78
Average sick time to each resident	3.17	2.85	3.10
Total number invalided	34	37	30
Percentage of invalidings to total residents	0.75	0.77	0.60
Percentage of invalidings to average number resident	0.81	0.83	0.65
Total deaths	19	11	16
Percentage of deaths to total residents	0.42	0.23	0.32
Percentage of deaths to average number resident	0.45	0.25	0.34
Number of cases of sickness contracted away from residence	Not available	Not available	Not available

CAUSES OF **Invalidings** OF AFRICAN OFFICIALS DURING THE PERIOD 1931–32.

Chronic nephritis	4	Cardiac incompetence	4
Defective vision	4	Psycho-neurosis	3
Chronic arthritis	3	Paraplegia	2
Pulmonary tuberculosis	2	Leprosy	1
Aortic aneurism	1	Cranial syphilis	1
Delusional insanity	1	Abdominal tumour	1
Perineal fistula	1	P.U.O.	1
Pneumonia	1		

Total 30.

CAUSES OF **Deaths** OF AFRICAN OFFICIALS DURING THE PERIOD 1931–32.

Pneumonia	3	Hepatic cirrhosis	1
Chronic nephritis	2	Broncho-pneumonia	1
Malignant tumour	1	Lysol Poisoning	1
Encephalitis lethargica	1	Cardiac incompetence	1
Rupture of Aorta	1	Hepatic abscess.	2
Septicaemia	2		

Total 16.

D.—GENERAL AFRICAN POPULATION.

The population at the census in April, 1931, numbered 3,163,568, an increase of 37.5 per cent on the figures for 1921.

It is impossible to calculate a birthrate for the Colony as a whole owing to the fact that registration only extends to 32 of the principal towns.

For the sake of comparison with previous years particulars are given below of Births, Deaths and the Infant Mortality Rate at six of the principal and most populous centres in the Colony and Ashanti.

During the year Births and Deaths registered in the Colony and Ashanti numbered 8,239 and 5,972 as compared with 8,054 and 5,972 respectively in 1931.

For further particulars *see* the Report of the Principal Registrar of Births, Deaths, and Burials for the Gold Coast Colony and its Dependencies, 1931.

11. Table showing Births, Deaths and the Infant Mortality Rate at Six Principal Towns.

Station.	1927			1928.			1929.			1930.			1931.		
	Births.	Deaths.	Infant Mortality Rate.	Births.	Deaths.	Infant Mortality Rate.	Births.	Deaths.	Infant Mortality Rate.	Births.	Deaths.	Infant Mortality Rate.	Births.	Deaths.	Infant Mortality Rate.
Accra	2,246	1,157	111	1,919	1,309	150	2,576	1,293	135	2,599	1,250	112	2,901	1,299	95
Kumasi	531	492	133	584	554	113	742	642	125	774	727	124	952	805	120
Cape Coast	302	310	119	255	363	121	460	311	63	552	317	61	489	319	85
Sekondi	246	285	60	207	314	77	253	279	110	289	291	114	242	236	95
Koforidua	198	215	146	420	205	90	513	253	124	345	402	208	365	289	153
Tarkwa	58	208	258	43	118	209	71	123	112	65	144	200	44	179	340
Total ...	3,581	2,667	827	3,428	2,863	760	4,615	2,901	669	4,624	3,131	819	4,993	3,127	888

III.—HYGIENE AND SANITATION.

A.—General Review of Work done and Progress made.

I.—PREVENTIVE MEASURES.

(*i*) *Mosquito and Insect-borne Diseases.*

(*a*) Malaria.

The returns of registered deaths for the year 1931–32 afford evidence of an increase in the incidence of malaria over that of the previous year, six per centum of all deaths being attributed to this disease and blackwater as compared with five for the previous twelve monthly period.

Anti-malarial measures undertaken during the year under review may be briefly summarised as follows :—

(1) Routine and special anti-malarial surveys.
(2) The inspection of children for signs of splenic enlargement.
(3) The mosquito-proofing of a number of dwellings or of portions of same.
(4) Propaganda to encourage the use of mosquito boots and of mosquito nets.
(5) Encouragement for the taking of prophylactic quinine or "Quino-plasmoquine."
(6) Sterilisation of the blood of those found to be infected with the organism at hospitals or welfare centres.
(7) Education of those particularly susceptible to malaria, as for example non-African residents of the country.
(8) The construction of temporary and permanent drainage systems.
(9) The filling in or draining of swamps and water holes.
(10) The utilisation of a one per centum mixture of Paris green with dried slaked lime, or incinerator dust on swamps and ponds too extensive to be filled, as a larvacide.
(11) The stocking of wells, ponds and lagoons or lakes with larva-eating fish.
(12) The clearance of bush near to houses likely to be made use of as a resting place for mosquitos.

To deal with some of these measures.

(2) Splenic rates in children in the five large stations are given below :—

TABLE I.

Locality.	*Percentage with enlarged spleen.*
Accra	16.9
Sekondi	29.8
Cape Coast	14.9
Koforidua	42.1
Kumasi	30.2

(3) The mosquito-proofing of officials' quarters is steadily encouraged. Particulars of those quarters which have been proofed are given below :—

TABLE II.

Province.	Total permanent quarters.	Total temporary quarters.	Total bush quarters.	No. partly protected.	No. completely protected.
Accra	256	4	—	20	—
Eastern (other than Accra) ...	75	2	—	3	—
Central	51	13	3	—	—
Western	112	10	5	10	12
Ashanti	152	—	2	3	—
Northern Territories	42	22	1	24	—
	688	51	11	60	12

(7) The number of European firms who have provided accommodation in European residential areas as the result of propaganda has increased considerably in the past few years.

(8) Progress was made on the reclamation of the Korli Lagoon at Accra including the construction of 1,750 feet of dwarf wall and the excavation from the Lagoon bed of 56,000 cubic yards of material which was deposited in the low-lying land behind the wall.

The sum of about £6,000 was spent on this project and on the construction of certain link drains.

A considerable amount of temporary earth drainage work was carried out at Accra, at Achimota—where the staff and pupils devoted their free time during March, 1932, to improving conditions in the swamp between the College and the railway line—at Axim, Nsawam, Kumasi, and Tamale.

A number of contour and subsoil drains were constructed in Kumasi.

(*b*) Yellow Fever.

The year 1931–32 was marked by a disquieting recurrence of yellow fever after an interval of comparative freedom from the disease of over three years duration.

During the calendar year 1931, 17 cases were reported 12 of which or 70.6 per centum being fatal.

Before the end of March, 1932, three additional cases occurred making the total for the 12 months ending on the 31st of that month 20 and the case mortality 60 per centum.

The incidence from 1921 to 1931 is given in Table III.

TABLE III.

Year.	Cases.	Deaths.	Percentage mortality.
1921	4	4	100.0
1922	10	8	80.0
1923	19	16	84.2
1924	8	6	75.0
1925	7	4	57.1
1926	65	18	27.7
1927	107	40	37.4
1928	2	2	100.0
1929	—	—	—
1930	2	1	50.0
1931	17	12	70.6

The first case was recognised at Akuse in the Volta River District on the 21st of June, 1931, followed in five days by a second case.

The disease then broke out at Tamale in the Northern Territories.

This was succeeded by a fatal case at Kintampo in the Western Province of Ashanti and a further fatality at Pong-Tamale north of Tamale.

Fifteen days later a Syrian fell sick and died of the disease at Wale Wale on the Tamale-Zuarungu Road.

Two further cases then were isolated at Tamale and a single case at Oda in the Central Province of the Colony.

Tamale was the scene of another case followed by one at Salaga also in the Northern Territories. The seventeenth case was found at Tamale.

During March, 1932, three cases were reported, one being from Cape Coast in the Central Province of the Colony, one from Yapei near Tamale and the third (or twentieth) from Awudua near Prestea in the Western Province.

The racial incidence and mortality of the cases occurring in 1931–32 are included in Table IV.

TABLE IV.

	Colony.			Ashanti.			Northern Territories.		
	Cases.	Deaths.	Mortality.	Cases.	Deaths.	Mortality.	Cases.	Deaths.	Mortality.
			Per cent.			Per cent.			Perc ent.
AFRICAN.									
Male ...	5	2	40.0	—	—	—	4	1	25.0
Female ...	—	—	—	—	—	—	1	1	100
EUROPEAN.									
Male ...	2	—	—	1	1	100.0	3	3	100.0
Female ...	—	—	—	—	—	—	2	2	100.0
SYRIAN.									
Male ...	—	—	—	—	—	—	2	2	100.0
Female ...	—	—	—	—	—	—	—	—	—
ALL RACES.									
Male ...	7	2	28.6	1	1	100.0	9	9	66.6
Female ...	—	—	—	—	—	—	3	3	100.0
Persons ...	7	2	28.6	1	1	100.0	12	9	75.0

The widespread incidence of the disease gave rise to considerable concern and this was accentuated by the death of all the five European cases at Tamale.

Measures taken to prevent the occurrence and spread of yellow fever included the following :—

(1) Encouragement to so-called non-immunes or persons not indigenous to the Colony to dwell in residential areas reserved for this class of the community.

(2) Some 1,309,651 house-to-house inspections were carried out during the year in the Colony and its Dependencies in 9,405 of which mosquito larvæ were found breeding, Aedes aegypti being the species found in the majority of instances.

The index of 0.72 for every hundred premises visited compares with one of 0.87 in 1930–31.

A system of check domicilary inspections by the European staff was introduced towards the end of the period under review, together with cross-inspections or house-to-house visits by groups of Sanitary Inspectors from other town districts.

The imperative need in the interests of the safety of the community for the maintenance of skilled European supervision of anti-mosquito measures hardly requires emphasis.

(3) As in former years when cases of yellow fever were discovered isolation of the patient under a net, segregation and daily medical examination of contacts, fumigation of the dwelling affected and of neighbouring buildings, careful check surveys of the area in which the patient was believed to have been infected, restriction of the movements of individuals into and from the infected area, and special local measures, e.g. " dry pot " parades in cantonments and police lines the holding of Health Days and Health Weeks, and special lessons in yellow fever prevention in schools, were amongst the measures taken to combat the spread of the disease.

(4) Friendly contact was maintained with the Director (Dr. Henry Beeuwkes) of the West African (Rockefeller) Yellow Fever Commission and efforts will be made to co-operate with the members of the Commission in mapping out endemic areas on the Gold Coast by means of serum-protection tests.

The districts of Akuse in the Colony and of the Eastern and Western Dagomba in the Northern Territories were declared infected for yellow fever under the Infectious Diseases Ordinance during the year, the order being revoked when the danger passed.

(*c*) Dengue.

Dengue is not a disease of any importance in the Gold Coast or its Dependencies.

No special preventive measures were taken against this disease other than those already described in connexion with aedes prevention.

(*d*) Trypanosomiasis.

Less than 0.7 per centum of all registered deaths in the Colony and its Dependencies du ing 1931–32 were recorded as being due to trypanosome infection, the majority being males.

There is no evidence that the incidence of the disease or the severity of the type justify the diversion of funds utilised at the moment for the control of malaria, yellow fever, diseases of the alimentary tract, and so on.

Clearing of bush from the neighbourhood of much used fords, for 50 yards around towns and villages and in and around residential areas constitutes the major methods of prevention.

(*ii*) *Epidemic Diseases.*

(*a*) Plague.

Plague happily did not put in an appearance during the year 1931–32 but there was no relaxation in regard to preventive measures.

Some 88,270 rodents were caught and killed at Accra, Cape Coast, Koforidua, Kumasi, Sekondi, Takoradi and Winneba.

Every endeavour is being made to induce produce and lighterage interests to construct rat-proof go-downs, sheds and stores especially at the ports.

As soon as funds become available the rat-proofing of three cacao sheds at Takoradi will be carried out. The absence of concrete, rat-proof floors in these sheds results in a certain amount of destruction of bags and in the harbourage of rats in proximity to shipping.

A reserve of 10,000 doses of plague vaccine is kept on hand at Accra and a virulent strain of B. Pestis is maintained at the Institute for Medical Research at Accra enabling fresh stocks of vaccine to be prepared at short notice.

(*b*) Cholera.

Preventive measures against the disease are dealt with under the sub-heading "enteric."

(*c*) Smallpox.

Smallpox again broke out in epidemic form in the Northern Territories and in the Mandated Area of Togoland adjoining the Eastern Dagomba district of the former during the year.

The type was, however, very much milder than during the serious outbreak in the Colony in 1929–30, thus resembling a similar mild outbreak of large dimensions in the Belgian Congo which broke out concurrently.

The majority of the patients seen in the Togoland outbreak were found to have acquired the diseases by inoculation by a number of Mohammedan Malams or Priests.

The actual distribution of cases and deaths is seen in Table V and the percentage case mortality was eight.

TABLE V.

	Colony.		Ashanti.		Northern Territories.		Mandated Area.	
	1930–31.	1931–32.	1930–31.	1931–32.	1930–31.	1931–32.	1930–31.	1931–32.
Cases ...	7	—	13	—	74	28	—	173
Deaths ...	—	—	2	—	6	9	—	7

Vaccinations formed the keystone of preventive measures and the details are given in the following table :—

TABLE VI.

	1930–31.	1931–32.
Persons Vaccinated	376,668	374,074
Verified successful vaccinations	70,787	102,129
Percentage successful	87.8	87.6

Lanolinated lymph prepared by the Lister Institute was used, the expenditure for the year being £3,626.

The staff of 12 assistant public vaccinators was maintained at strategic points, for example, at the ports, at the main ferry crossings and at important road junctions.

Other preventive measures against smallpox included the isolation of cases in contagious disease camps or in temporary huts until desquamation was complete, the vaccination of contacts and the neighbouring population, the disinfection by fire or by disinfectants where available of quarters, clothes, etc.

(*d*) Enteric Fever.

Only ten deaths were registered as having been due to the enteric group of diseases during 1931–32 and a surprisingly small number of cases were treated in hospitals, although the case mortality rate is in the neighbourhood of 25 per centum.

It is generally believed that the incidence of these diseases is greater than is reflected in the hospital admission list or in the number of deaths registered giving enteric as the cause of death.

Preventive measures comprised public health propaganda on the value of pure water and food, the efficient disposal of night-soil and refuse, a continuous campaign against flies and fly-breeding, health education in schools to stimulate cleanly habits, the washing of hands before meals, the encouragement to officers to undergo preventive inoculation with T.A.B.C. vaccine at yearly intervals, and special measures in the nursing and treatment of discharges of patients suffering from the disease.

(*e*) Dysentery.

Dysentery, together with diarrhoea and enteritis, was responsible for 10.3 per centum of the deaths from all causes in 1931–32 and this group comes third on the list of fatal diseases for that year. From the figures available it would appear that the amoebic type is about twice as common as the bacillary.

Preventive measures include those enumerated under "enteric" other than that relating to specific inoculation.

(*f*) Cerebro-spinal Fever.

Only three cases of cerebro-spinal fever came under notice during the year all of which were fatal. The cases in question were seen at Accra, Adukrom and Wenchi in the Colony proper.

Preventive measures resolved themselves very largely into the avoidance of overcrowding and public health propaganda in housing and town-planning. Provision of adequate, permanent ventilation by means of louvred or jalousie windows and of the proper spacing of houses, was insisted upon as far as possible.

When individual cases arise they are isolated and every encouragement is given to the house contacts to improve the hygienic condition of the premises in which the patient lived and no attempt is made to segregate contacts in a confined space so to increase the risk arising from a possible carrier.

(*g*) Relapsing Fever.

During the period 1931–32 some 19 cases of relapsing fever were reported—chiefly from Kumasi and Accra—of which two ended fatally giving a case morality rate of 10.7 per centum.

The fact that the disease may closely simulate yellow fever both as regards albuminuria, jaundice,. haematemesis and Faget's sign and that microscopical examinations of blood smears do not always prove the presence of the spironema of obermeireri, necessitates the disease being treated with a considerable amount of respect.

Male labourers, usually belonging to the Zabrama or Zaberrima tribe from French West Africa, are the chief sufferers.

Lack of personal cleanliness and a diet approaching starvation on their way down to find work in the Gold Coast are important contributory factors.

A disinfestation station functioned satisfactorily in Kumasi during the year. Here 18,345 labourers passing south were bathed and shaved and had their belongings disinfested.

It is hoped to open up a similar station at the junction of the Savelugu and Karaga Roads in Tamale during 1932–33.

There is no doubt as to the usefulness of such a station from the preventive aspect.

Other preventive measures consisted of the hospitalisation of patients, the sterilisation of their blood streams with organic arsenic preparations, the disinfection of quarters previously occupied by the patient and of the clothes and belongings of house contacts.

(*h*) Yaws.

Yaws continues to loom largely in the out-patient departments of hospitals, dispensaries and welfare centres and is particularly common in the Northern Territories where water is often scarce, ulcers and skin disease are common and where refuse and nightsoil disposal is frequently such as to encourage fly-breeding.

In some districts 80 per centum of patients have to receive treatment for this disease.

On the seaboard where water is more readily obtainable, where improvements have been effected in village sanitation and where medical officers in charge of hospitals and welfare centres have been engaged in an anti-yaws campaign, the disease is rapidly being brought under control and is in a fair way to being stamped out.

In Kumasi, Ashanti, where the senior health officer at one time dealt with hundreds of cases in children, the smaller numbers of cases now attending for treatment are quite easily dealt with by the medical officers in charge of the welfare centre and hospital.

In so far as preventive measures are concerned, the treatment of infective cases and the improvement in personal, domestic and communal hygiene are undoubtedly the best weapons.

OTHER DISEASES.

(*a*) Leprosy.

Some 5,038 lepers were enumerated during the Census in April, 1931, giving a leprosy rate of 1.6 per mille of the whole population, varying from 0.6 in the Colony to 3.5 in the Northern Territories.

Settlements are maintained at Accra—where the original colony was started in 1921—at Kumasi in Ashanti, at Ho and Yendi in the Mandated Area of Togoland and at Navrongo in the Northern Territories, this last being operated by the White Fathers.

Segregation remains on a voluntary basis and quite an appreciable number of lepers attend for out-patient treatment.

Efforts are made to induce all lepers suffering from open sores and an infective stage of the disease to enter a settlement if accommodation is available or, alternatively, to live in a hut or room apart and not to use the feeding utensils belonging to healthy relatives or friends.

(Note.—An article on the treatment of leprosy by protein shock therapy by the Medical Officer of Health, Kumasi, is appended).

(*b*) Tuberculosis.

Pulmonary tuberculosis followed closely upon non-tuberculous diseases of the respiratory system in being one of the most important causes of death in 1931–32.

Furthermore, the ratio of deaths from this affection to deaths from all causes rose from 11.5 in 1930–31 to 12.5 in 1931–32.

Deaths from pulmonary tuberculosis are more than twice as common amongst males as amongst females and the labourer employed on mines or who has been so employed contributes an altogether disproportionate number of deaths to the total bill of mortality.

In this connexion over a quarter of all deaths occurring at Tarkwa, an important mining centre, were due to pulmonary tuberculosis in 1931.

It is of interest to note that other forms of tuberculosis form less than 5 per centum of the pulmonary type.

Preventive measures against the disease include the provision of a special ward for tuberculosis cases in the Gold Coast Hospital, Accra, and of accommodation in the Contagious Diseases Hospital at Kumasi.

In other stations open cases are treated when possible on the verandahs of general wards.

When cases of or deaths from the disease come to the notice of the local health authorities every effort is made to improve the housing conditions where the case originated.

Where staff is available the immediate contacts are examined and are kept under observation for some months being instructed in the hygiene of the home.

Housing and town-planning occupy an important place in preventive measures.

Intimately connected with housing is the question of overcrowding. Here the chief sufferers (and often the chief offenders) are male labourers between 18 and 40 years of age.

In the larger centres where the Towns Ordinance applies legal steps can be taken to stop overcrowding. There are, however, certain obvious difficulties in making good use of this provision.

Two somewhat curious impediments exist against securing the satisfactory ventilation of dwelling houses in the African townships. One relates to the fear of ghosts entering rooms at night through open windows and the second to the very real fear of thieves. To overcome these difficulties to some extent at any rate householders are advised to have stout iron bars fixed into their window frames and to replace ledge and batten windows by the louvred or jalousie variety which will permit of a certain amount of ventilation even when the windows are closed.

The removal of villages to dry sites where possible and the improvement of drainage may be said to be included amongst the preventive measures against the disease.

Propaganda, confined chiefly to schools, against spitting has made little headway so far but it must be remembered that legal sanctions had to be obtained against offenders in even more enlightened communities.

Early in 1932–33 it is hoped to undertake a thorough examination of the tuberculosis question amongst mine labourers, and a careful investigation into local conditions in the mining areas will be carried out by a senior officer of the Health Branch with a view to devising schemes for the prevention of suffering and loss of life from the disease in those areas.

(*c*) Pneumonia.

Diseases of the respiratory system, other than and after tuberculosis, are the chief cause of death in the Gold Coast and its Dependencies according to the registrations of death and they accounted for 10.9 per centum of deaths from all causes in 1931–32.

Preventive measures include advice and treatment given at hospitals and welfare centres, improvement of housing and ventilation and those directed towards the control of malaria and ascaris infection and to correcting dietaries.

(*iii*) *Helminthic Diseases.*

(*a*) Ascariasis.

Ascaris infection is very general and not a few cases occur amongst the European population possibly the result of contamination of food by unwashed hands or by flies.

Medical officers in charge of welfare centres encounter numbers of children suffering from anæmia, bronchitis, broncho-pneumonia, oedema and other conditions attributable to ascaris infection.

Proper control of nightsoil disposal, campaigns against flies and educational propaganda amongst the parents or relatives of sufferers and in the schools comprise the more important method of combating this disease.

(*b*) Ankylostomiasis.

As in some other parts of the tropical world the indigenous inhabitants of the Gold Coast appear to be able to suffer from a moderately heavy infection with hookworm without exhibiting any marked physical signs or symptoms of anæmia, lassitude, etc. Only 18 deaths were attributed to this disease during the year.

Constant efforts are being made to secure the provision of a satisfactory system of night-soil disposal and education is being carried out in the schools and in towns and villages to stimulate the provision of adequate latrine accommodation.

The old-fashioned and unsatisfactory perch-type of communal latrine is gradually being replaced since its design is such as to invite fouling. Modified septic tanks designed after those in use in India with squatting plates or the less costly squatting-plate type of pan or fly-proof pit latrine are much more satisfactory from the hygienic standpoint.

Whenever possible and in order to limit the danger of infection cement squatting-plates are made use of to cover fly-proof pit latrines.

(*c*) Dracontiasis.

Dracontiasis is a disabling disease in many parts of the Northern Territories and in certain districts in Ashanti and along the littoral where water supplies consist chiefly of ponds and pools.

An outstanding event of the year was the opening of the Tamale Water supply.

Good progress was made on the pipe-borne water supply for Kumasi but it is doubtful whether this will be available before the middle of 1933.

Much work was done in improving village water supplies in Ashanti with the help of the chiefs and of their peoples and a certain number of public wells were constructed in the more populous regions in the Northern Territories.

Where there is presumptive or definite evidence of a pool, well or water-hole being infected this is treated with chlorinated lime.

Troops are prevented as far as possible from using untreated water whilst on the march and away from headquarters.

(*d*) Schistosomiasis.

S. mansoni and S. hæmatobium both occur in a proportion of the patients attending hospitals.

In some districts the popular mind not infrequently confuses the disease with gonorrhoea.

The control of night-soil disposal and, in particular, the prevention of fouling of ponds and the banks of streams used for bathing purposes was aimed at.

Animal Diseases.

Anthrax accounted for five deaths in cattle in the Eastern Dagomba District of Togoland and four other sporadic cases were confirmed in the Southern Province of the Northern Territories.

The Principal Veterinary Officer successfully treated with tartar emetic 40 head of cattle suffering from trypanosomiasis in the Government herd at Pong-Tamale and is hopeful that it will be possible to rid large areas of country at any rate in the eastern half of the Northern Territories of G. palpalis and tachinoides by clearing along the banks of rivers and the mouths of streams and swamps draining into them. Rinderpest prevailed in the Accra herds.

Outbreaks of rabies occurred in Accra, Aburi, Kumasi and Tamale confirmed by the discovery of Negri bodies.

The Veterinary Department co-operated with the Health Branch of the Medical Department in combating these outbreaks.

Many dogs succumbed to a virulent form of distemper in Accra and Kumasi.

A case of generalised tuberculosis in a dog was seen by the Veterinary Officer in Accra.

Tuberculosis has been reported among cattle in Northern Nigeria but no case has been detected amongst cattle in the Gold Coast.

Two pigs with glandular tuberculosis were discovered at Keta.

The results of meat inspection at the Tamale and Savelugu abattoirs are of particular interest in that they represent the findings of skilled veterinary officers.

TABLE VII.

	Tamale.			Savelugu.
	Number slaughtered.	Number infected.	Percentage.	Percentage.
CATTLE.				
Cysticercus bovis	668	57	8.5	21.6
Contagious bovine pleuro-pneumonia ...	668	10	1.5	2.5
Trematodes in liver...	668	208	31.0	19.1
Onchocercosis	668	27	4.0	—
Echinococci	668	3	0.5	—
SHEEP AND GOATS.				
Caseous lymphadenitis	2,720	147	5.4	9.2
Pleuro-pneumonia of goats	2,720	18	0.6	—
Trematodes in liver...	2,720	87	3.2	6.1
Hepatitis (various)	2,720	612	22.5	24.0
Intestinal worms (*oesophagostomum columbianum)	2,720	484	17.8	30.0
Nephritis	2,720	10	0.4	3.0
Echinococci	2,720	1	0.4	1.2

*This represents gross infections only.

II.—GENERAL MEASURES OF SANITATION.

(*a*) SEWAGE DISPOSAL.

The water-carriage systems of night-soil disposal installed some years ago in connexion with the Gold Coast Hospital and staff quarters at Accra, with the Prince of Wales College, Achimota, with certain public latrines at Accra and with the European Hospital and certain quarters at Takoradi continue to function satisfactorily.

The condition of the Korli Lagoon, Accra, has been greatly improved by the connecting up of the ends of the main street drains with a septic tank installation, the effluent from which is pumped into the sea. The drains in question are misused as receptacles for both solid and liquid dejecta and the odours arising from the lagoon as the result had to be experienced to be realised. This work was completed by the Public Works Department early in 1931–32 and was handed over to the Accra Town Council.

With few exceptions the dry pail-latrine system is in vogue in all residences. It is to be hoped that property owners will instal in suitable areas an hygienic type of water-borne sewage with septic tank and aerating bed as soon as economic conditions improve to take the place of the present out-of-date system.

In the larger centres pails are removed by motor lorries to tipping or disposal depots where the night-soil is thrown into the sea, entrenched or deposited into fly-proof disposal pits.

Trucks and head-loading take the place of lorries in smaller townships.

In order to reduce the charges incurred for labour and motor transport a number of so-called septic tank latrines have been constructed in the Accra area and elsewhere.

These amount to little more than ventilated water-tight cess-pits but a certain amount of liquefaction takes place and so far the experiment has been successful. Care has to be taken to prevent fly-breeding.

Provided that adequate supervision is available the Howells type of barrel latrine consisting of a battery of barrels in which excreta is broken down into a more or less innocuous fluid, has given satisfaction.

Apart from a small number of sea latrines as at Accra and Elmina in which dejecta drop straight into the sea, the commonest type of latrine in all townships not possessing pail conservancy is the pit latrine.

Pit latrines can be an appalling nuisance and not far removed in harmful effect from an entire absence of means of disposal.

On the other hand even with the worst constructed and kept pit latrine there there is a concentration of nuisance in one place, hence lessened opportunities for infection with ankylostomes and fly—and dust-borne diseases in general.

The high incidence of tæniasis amongst the inhabitants of several portions of the Northern Territories and its cause has been referred to already in this report.

In passing, it might be mentioned that, whilst it is readily agreed that there are certain difficulties peculiar to the Northern Territories in so far as the provision of communal latrines are concerned, sanitary conditions—reference is made to the most elementary principles—are quite unnecessarily primitive in many populous areas and every endeavour should be made to improve matters.

Emphasis is laid on the desirability of establishing the principle of grouping male latrines, female latrines, incinerators or burning dumps and drying sheds or dustbins on the assumption that persons carrying refuse usually desire to make use of a latrine.

A thorough trial has been given to the smoke pit latrine first described, it is believed, by Nouchet in East Africa.

The body of opinion would appear to show that this type of latrine requires a considerable amount of supervision and that a dislike to its use is not infrequently exhibited by persons using it owing to smoke getting into the eyes. When well maintained the smoke pit is free from flies.

Of all types of pit latrine perhaps the most suitable for use in remote areas is the fly-proof pit using squatting-plates of reinforced concrete cement—the aperture in the seat being the lowest portion of the floor of the latrine.

The African normally, and very wisely, adopts a squatting attitude when answering the calls of nature, thus the box seat or perch type of latrine common in Western countries is quite unsuitable in the majority of cases where Africans are concerned.

(*b*) Refuse Disposal.

In the large townships fleets of motor lorries convey refuse to destructors, concrete, brick and mud incinerators or burning dumps, whilst in smaller towns mechanical transport is replaced by hand truck and head-load.

In Kumasi, only indestructible refuse has to be conveyed by lorry since the incinerators scattered about the town are capable of dealing with combustible refuse.

In villages and places lacking sanitary labour efforts are made to induce chiefs and headmen to engage and pay labour to deal with the refuse problem ; and where this is impracticable burning dumps are sited on land adjoining latrines so that the disposal of refuse (and any nuisance incidental thereto) is confined to definite areas easily accessible to the villagers or townsfolk.

In several townships in Ashanti the system of chiefs and headmen maintaining a gang of scavengers has worked satisfactorily on the whole, although payment of wages has been delayed or stopped without notice at times and the labourers trained by the Health Branch have left the place.

It has only been possible to inaugurate schemes of this nature to a very limited extent in the Colony proper but there is room to hope that provision will be made under the Native Revenue Ordinance for the allocation of a definite percentage of stool revenue for health work, thereby ensuring the necessary attention being paid to health requirements.

It may be of interest to note that the destructor at Accra dealt with an average of 100 tons of refuse per diem during the year.

It is hoped that the existing tin crusher which can only deal with small tins will be replaced when funds become available.

(*c*) Drainage.

Although the state of the revenue allowed of comparatively little permanent, concrete drainage construction during the period under review, a small amount was carried out by the Public Works Department in Accra and in the other important centres.

Mention has already been made of the progress effected in the canalization of the Korli Lagoon, Accra, and the construction of a concrete retaining wall, which incidentally, assisted by the prevailing breeze inhibits mosquito-breeding owing to the strong wave action.

Temporary earth drainage occupied an important position in anti-anopheline and anti-mosquito field activities and this included a certain amount of subsoil and contour drainage which is in its infancy in this country and which is a strong feature of anti-malarial work in Malaya.

The staff and pupils of the Prince of Wales College, Achimota, carried through a highly creditable drainage scheme in the malarial marsh to the windward of the College.

Extensive repairs are required to the concrete drains in Accra and elsewhere, the inverts having been worn away by the action of ammoniacal waters and sandy detritus. Funds are, however, not available for this maintenance work at the moment.

(*d*) Water Supplies.

The outstanding feature during the year in so far as water supplies are concerned was the turning on of the supply at Tamale by His Honour Major F. W. F. Jackson, C.M.G., D.S.O., Chief Commissioner of the Northern Territories, on the 26th March, 1932. This very much needed improvement will have a far reaching effect upon public health in Tamale and the prosperity and growth of that township.

Briefly, the new supply consists of an impounding reservoir from which water gravitates to sedimentation tanks where it is treated with alumina. After this clarification and before the water is pumped through a pressure filter it receives a dose of chlorine from a Patterson Chloronome.

From the filter the water passes to an elevated service tank from which a main feeds the town, hospitals, residences, cantonments, etc. It is hoped that funds may be made available for the purchase of an auxiliary pump so that chlorination can be carried out *after* instead of *before* filtration.

The water purification plant in connexion with the Veterinary Headquarters at Pong-Tamale north of Tamale should yield a satisfactory supply after certain adjustments have been made in the process.

Work progressed on the Owabi scheme for the Kumasi supply but is unlikely to be completed during 1932–33.

The pipe-borne supplies at Accra, Winneba, Cape Coast and Sekondi and Takoradi continue to give satisfaction. The new service reservoir at Accra has been a great boon to the inhabitants, since it has rendered the supply proof against bursts in the main from Weija and has resulted in adequate pressure being available for buildings on the higher land in and around the town.

Minor improvements were carried out to a number of village supplies in Ashanti and a certain number of public wells were constructed in a few of the larger towns in the Northern Territories. Investigations were made as to the possibility of a well supply for Salaga in the Northern Territories and tests are being carried out at the moment of writing.

Of towns which have to rely upon roof or well water, Koforidua and Saltpond are perhaps in the most need, although there are many less important towns, for example, Nsawam, Somanya, Odumasi, Late, Akropong, etc., where urgent improvements are needed.

The practicability of extending the Cape Coast supply to Saltpond and to the larger intervening villages was investigated by the Senior Hydraulic Engineer and it is much to be hoped that funds will be forthcoming for this project when the revenue of the Colony improves.

The Koforidua supply has figured frequently in annual and special reports of the Health Branch and it is certainly one of the most vital requirements of that town.

It has been pointed out that the majority of the people of Koforidua have to subsist upon an inadequate quantity of water from the small Koforidua Su.

The table given below affords some idea of the quality of the water supplied at Accra and Sekondi-Takoradi from the bacteriological standpoint.

TABLE VIII.

Source.	Total No. of samples.	No. without B. coli in 100 c.c.	No. with B. coli in 100 c.c. but not in 10 c.c.	No. with B. coli in 10 c.c. or less.	Percentage of samples with B. coli in 100 c.c. or less.
ACCRA.					
Storage Reservoir No. 1 ...	13	13	—	—	—
,, ,, No. 2 ...	11	7	2	2	36.4
Final Filter No. 1	13	13	—	—	—
,, ,, No. 2	14	13	1	—	7.1
,, ,, No. 3	15	14	1	—	6.6
,, ,, No. 4	14	13	—	1	6.7
,, ,, No. 5	13	13	—	—	—
,, ,, No. 6	14	13	1	—	7.1
Laboratory Tap	55	51	3	1	7.3
Total	162	150	8	4	4.9
SEKONDI-TAKORADI.					
Raw Water	2	—	—	2	100.0
Final Filter	2	2	—	—	—
Market Tap	1	1	—	—	—
Water Barge	6	6	—	—	—
Harbour Area	33	33	—	—	—
Residential Area	42	41	1	—	2.4
	86	83	1	2	9.7

(*e*) CLEARANCE OF BUSH AND UNDERGROWTH.

Clearance of bush and undergrowth is carried out in the larger towns to the extent rendered possible by available funds.

In the Colony proper, except in the towns to which the Town Councils Ordinance has been applied, chiefs captains and inhabitants of all towns under the Town Ordinance are required by regulation to keep open spaces in the town and its surroundings free from bush, refuse, deposits, etc. In practice it is frequently found necessary to bring captains of sections and others to court for disregarding notices to clear.

It is possible that when the Native Revenue Ordinance is in force this difficulty will be met by a health rate for the payment of labourers retained for this purpose.

For the Colony of Ashanti rules are applicable in a number of townships which require land to be cleared of bush by the occupier for a distance of 20 yards from his premises with a penalty of 40 shillings in case of default. In other towns and villages to which these rules have not been applied chiefs and headmen are required to cause to be made and to be maintained a clearing of 50 yards in depth round the village.

Practically speaking this clearing is frequently neglected and efforts to secure compliance with this (and other sanitary rules) not infrequently end in failure; since the feeling of responsibility for the sanitary state of their towns and villages is—with a small number of brilliant exceptions—conspicuous by its absence.

In the Protectorate of the Northern Territories, the same rule applies with regard to an occupier keeping land within 20 yards of a dwelling free from bush, undergrowth, etc., and also lays a duty on the chief or headman to cause bush and undergrowth to be cleared for a distance of 50 yards round his village or round each compound when the village is composed of isolated compounds. In addition it is laid down that no person shall grow any crops within 100 yards of any building in a town.

With certain highly commendable exceptions, for example, Salaga and Bawku, these rules are not generally obeyed.

In townships where adequate supervision from Health staff is available and where the rainfall is comparatively low, it is customary to encourage farming on the open spaces round the margins of the residential areas since this reduces the sum to be spent on clearing gangs.

This privilege is only accorded, however, to persons willing and able to maintain their farmed area free from tins, bottles, refuse, excrement, etc., and is rescinded if this condition is not fulfilled.

It is not granted for obvious reasons in the African township proper nor where it is likely to give rise to malarial and yellow fever conditions.

(*f*) Domiciliary Visiting and Inspections.

House-to-house visits are carried out by both European and African Health staff, by health visitors, and Government midwives working in conjunction with welfare centres and health officers and by voluntary workers who are members of the Gold Coast League for Maternal and Child Welfare.

Domiciliary visits by Sanitary Inspectors and the European staff numbered 1,309,651 during the year 1931–32. This compares with 1,199,382 in 1930–31 and 840,725 during the previous period.

Further details in respect of certain of the more important towns are appended below :—

TABLE IX.

Town	Convictions for mosquito larvae.	Fines for larvae.	Convictions for insanitary conditions.	Fines for insanitary conditions.
		£ *s.* *d.*		£ *s.* *d.*
Accra	411	357 7 6	2,942	729 15 0
Koforidua	232	89 11 0	1,192	253 10 0
Cape Coast	225	88 0 0	193	47 13 6
Sekondi	218	73 19 0	669	100 16 6
Kumasi	455	166 7 0	1,698	397 15 6
Tamale	412	40 6 0	345	28 7 6
Total	1,953	815 10 6	7,039	1,557 18 0

The total amount recovered in fines in the towns listed above reached the sum of £2,373 8s. 6d. as compared with £3,293 4s. 6d. in 1930–31.

Whilst sufficient emphasis cannot be laid on the desirability of limiting prosecutions as far as possible, where it has become necessary to resort to legal action after all efforts at suasion and the issue of notices have proved fruitless, it is obviously necessary that fines should be of such a nature as to act as deterrents. Inadequate fines result in a contempt of the law and a disregard of the duties of citizenship.

III.—SCHOOL HYGIENE.

The periodical inspection of school premises and their immediate environs forms part of the duties of the Health staff. Owing to the retrenchment of several of the lady medical officers in charge of welfare centres, it was necessary for health officers to undertake the medical examination of scholars in addition.

These inspections were chiefly confined to the examination of the pupil for splenic enlargement, the presence of marks of successful vaccination, the presence of yaws and other skin diseases requiring medical attention and general cleanliness of person and clothes. The medical examination was very much more thorough in the case of the Prince of Wales College, Achimota, owing to the presence there of a whole-time medical officer and an assistant African lady medical officer. Large numbers of bloodsmears were taken and examined by the medical authority at Achimota and revealed a high infection rate amongst the pupils, more particularly the younger ones. These blood examinations were carried out in connexion with a scheme to ascertain whether small doses of quinine or of "Quino-plasmoquine" would control malaria in the College combined with anti-malarial drainage of the low-lying areas adjoining the railway line.

In Table X the results of examination for splenic enlargement are given.

TABLE X.

Locality.	No. of school children examined.	No. found with enlarged spleens.	Percentage of children with enlarged spleens.
Accra	1,190	201	16.9
Sekondi	141	42	29.8
Cape Coast	1,008	150	14.9
Koforidua	1,285	541	42.1
Kumasi	53	16	30.2

An important standard for the ventilation of schools and school dormitories was established during the year and the law was amended so that "schools" might be included in the definition of premises.

IV.—LABOUR CONDITIONS.

The Gold Coast and its Dependencies continues to depend to some extent upon immigrant labour; but the fall in revenue and the consequent retrenchment of personnel and the almost complete cessation of public works of any magnitude have had a considerable influence in diminishing the wave of immigration from French territory and from the Kru Coast.

In the past a not inconsiderable proportion of labour for purely menial work arrived in the Colony annually from the Kru Coast but it has been found in practice that members of the Dagarti and certain other Northern Territory tribes are quite as capable and are more amenable to discipline.

Only 1,433 immigrant labourers landed at Takoradi during the year, whereas this class numbered 3,088 in 1930–31.

Owing to the comparatively low price of cacao and the small profits to be earned from this source, farmers are beginning to cultivate and harvest their crop with the aid of their families and without engaging immigrant labour.

A general reduction in the rates of pay has taken place latterly but the cost of staple articles of diet, for example, yam, cassada and maize has also fallen thus counterbalancing to a certain extent the effects of the wage reduction.

V.—HOUSING AND TOWN-PLANNING.

In spite of the dearth of money a considerable number of new buildings were constructed by private individuals during 1931–32 and it is heartening to realise that the value of well-built house property as an investment and as a legacy to a man's family is appreciated by the people of the Gold Coast to an increasing degree.

This is well illustrated in Table XI which gives particulars of building operations in certain of the large townships.

TABLE XI.

Place.	No. of building permits submitted.	No. of building permits passed.	No. of buildings constructed.
Accra	118	70	17
Cape Coast	55	43	18
Sekondi	104	91	13
Kumasi	86	86	55
Koforidua	167	130	30

In spite of set-backs the improvement in the type of house built in the smaller townships and villages to which few building regulations or rules are applied, progresses steadily.

The people are gradually being convinced that it is not only advantageous to possess a building plot of adquate dimensions (e.g., 60 foot frontage and 80 foot depth), so that when the size of the family or of the family exchequer grows additional rooms can be constructed without rendering the buildings congested and unhygienic, but that it is also an economy in the long run to build in solid swish or mud—which will last for a lifetime and longer—rather than in wattle and daub which becomes ant-eaten, rat-ridden, weather beaten and even dangerous in the course of a few years.

To surmount the difficulty of the initial cost in labour and material of a mud wall round a partly completed compound, owners of plots in village layouts are advised to complete the frontage of two rooms and a hall and to make use of zanah matting or wood fence or live hedge for enclosing the compound until time and funds allow of the construction of a solid mud wall, suitably protected from the elements by a rendering of cement on its upper surface or by protecting this with shingles, kerosine tins or corrugated iron.

Few new layouts of smaller townships were pegged out during the year owing to the economic position and it has been the rule for some time past for the health officer to consult the District Commissioner when an application is received to commence a new layout.

Encouragement is given to villagers to complete their buildings in layouts, although stress has been laid on the undesirability of incurring heavy debts for sheet iron, etc.

Once the price of cacao and trade generally improves there is little doubt but that many of the houses in village layouts which are as yet unfinished, will be rapidly completed.

The present policy consists largely of consolidating the work on the very numerous layouts that have been started in the past seven years (chiefly in Ashanti) rather than undertaking fresh work of a similar nature at the moment.

Of town-planning proper, apart from the layouts referred to earlier in this section, there was little activity in 1931–32. In the opinion of many Kumasi retains its place as the best example of town-planning—including the remodelling of the old town—that is to be seen in the Colony or its Dependencies.

VI.—FOOD IN RELATION TO HEALTH AND DISEASE.

(1)—Markets.

A new market, the Kotokurabah Market, was opened at Cape Coast in October, 1931, and the old, congested market was levelled and converted into a lorry park. The old Bread and Fruit Market in the same town has been improved and renamed Papratam Market.

Several additional sheds were erected in the Kumasi Market and it is of interest to note that, although the capital cost of this market from its beginning in 1924–25 to the 31st of March, 1932, only amounted to £14,331 and the annual maintenance cost is approximately £710 (the actual cost in 1931–32), the revenue in 1931–32 amounted to £5,061.

It is clear that the capital expenditure and annual maintenance charges have been more than met since it was opened and that the market now forms a large source of revenue capable of being used for its further improvement and on town improvements generally. This is a highly creditable achievement and the system of administration and general organisation might well be copied elsewhere.

The chief drawback to many of the markets in the Gold Coast has been the lack of vision in securing an adequate area in the first instance. There are now six fly-proof meat markets in the Gold Coast and they continue to give complete satisfaction.

(2)—Slaughter Houses.

Slaughter houses or slabs with efficient means of disposal of blood, offal and excrement in sand pits below high water mark on the shore or into fly-proof disposal pits are to be found in the majority of the larger towns; a good many cattle, however, are slaughtered in outlying places on the ground and the flesh is cut up on plantain leaves.

Animals are examined by officers of the Animal Health Department or of the Health Branch of the Medical Department before slaughter in all the larger towns and the carcases are subjected to inspection and stamping before removal from slaughter house to meat market.

(3)—Cattle Sheds.

Apart from those in connexion with the veterinary station at Pong-Tamale in the Northern Territories, it is the exception to find cattle-sheds and such shelters as are to be found, usually in association with kraals, are of an open, airy nature.

(4)—Dairies.

There is a lack of anything that corresponds to a dairy in the Gold Coast and such milking as is done in privately owned herds is performed in the open or in rough temporary shelters.

(5)—Aerated Water Factories.

The health requirements laid down in the case of aerated water factories have acted as a deterrent to the opening up of numbers of plants in unsuitable surroundings, lacking facilities for cleansing bottles and for producing a sterile water.

Bye-laws or regulations governing these factories are in force in Accra, Sekondi and other towns and were introduced into Cape Coast during the year.

(6)—Restaurants and Eating Shops.

The few restaurants and eating shops in existence are confined chiefly to the coast towns and Kumasi. They are subjected to routine inspection to ensure the preservation of satisfactory hygienic conditions especially as regards good ventilation, general cleanliness, protection of food and drink from dust and flies, disposal of water and the provision of adequate water supply for washing up eating utensils.

In some towns restaurants are subject to a special licence and opportunity is taken when licences are applied for of inducing the applicants to bring their premises up-to-date from an hygienic standpoint.

(7)—Bakeries.

The licensing of bakeries in the larger towns has brought about a marked improvement in the making of bread.

(8)—Food Inspection.

In addition to the routine inspection of foodstuffs in markets and of meat at slaughter houses, periodical visits are paid by the European Health staff to shops and stores for the purpose of examining tinned foods, flour in barrels, etc.

It is rarely necessary to prosecute shopkeepers for selling or exposing for sale unwholesome foods and these are readily surrendered for destruction.

(*a*)—Deficiency Diseases.

In so far as the bulk of the population of the Gold Coast and its Dependencies is concerned, there would appear to be little reason to suspect that dietaries are deficient in calorific value; although under exceptional circumstances, as for example during prolonged droughts or after visitations from locusts, the population may have to subsist on a semi-starvation diet for a period. This occasional privation is probably confined to local areas in the Northern Territories.

Fruit does not form an important part of the normal dietary of the Gold Coast African more especially in the case of the inhabitants of the Northern Territories. On the other hand vitamin and mineral containing articles like onions, tomatoes, ground up raw green leaves and native "spinach" form part of the daily diet of many.

Judging from the fact that disease of the respiratory system, apart from pulmonary tuberculosis, occupy first place amongst the list of the chief causes of registered deaths and to the fact that these diseases are particularly common in many tribes in the Northern Territories, there would appear to be grounds for belief that there is a distinct lack of vitamin A in the average diet of the indigenous African and more particularly amongst Northern Territory tribesmen.

Ulcers are perhaps one of the most important causes of ill-health and disability in the Gold Coast especially in the north. Shortage of water even for drinking and much more so for ablution purposes no doubt accounts in part for much of this chronic ulceration but there is some reason to believe that a proportion are due to avitaminosis—rest, clean, aseptic dressings and a daily dose of cod liver oil working wonders in non-specific cases.

Dental caries, on the other hand, is not unduly common as compared with its prevalence in some of the Eastern races, for example, the Chinese in Malaya.

Beri beri is fortunately uncommon in the Gold Coast and the sufferer is usually an immigrant Kru.

Rickets is still more uncommon. The occurrence of the disease on the Gold Coast has actually been denied by some who suggest that the bony swellings are of framboesic origin.

One case of scurvy and four of rickets were reported amongst 18,000 examined but no record of confirmation of these conditions would appear to exist.

(*b*) Measures taken to spread Knowledge of Hygiene and Health.

Hygiene forms part of the curriculum of Government and Mission schools and in training institutions like Achimota College, Wesley College and the Akropong Seminary.

Every effort is made to secure that teaching is on as practical a basis as possible.

For example, pupils in the infant classes are subjected to a daily inspection of hands, hair and clothes and they are encouraged to keep their classrooms clean and tidy.

Older children are subjected to periodical inspections and are made responsible for the cleanliness of their classrooms and the school compound.

With still older boys, more particularly in rural schools, the pupils are given the task of constructing their own latrines and incinerators. The excellent anti-malarial drainage work carried out by the staff and pupils at Achimota College has been referred to elsewhere. Both at Achimota College and at the Akropong Seminary pupils undertake social service work in villages in the neighbourhood. In the more up-to-date of the girls' schools, mothercraft, infant welfare and personal and domestic hygiene occupy an important part of school training.

The Director of Education and his officers invariably give the officers of the Health Branch of the Medical Department every help and encouragement in connexion with the practical application of the theoretical lessons in hygiene.

Periodical Health Weeks and Health Days were held during the year and the co-operation of local schools was invariably asked for and given.

A monthly Health Day continues to be held in Accra, Christiansborg and Labadi. A Health Week is held annually in Kumasi and successful Health Weeks were held at Winneba, Keta, and Obuasi, and a monthly Health Day was held at Accra during the year. Lectures, informal talks, demonstrations, displays, anti-rubbish campaigns are the order of the day and form a ready means of spreading the knowledge of hygiene to the general population in a palatable form.

Domiciliary visiting is yet another method of bringing home the need for and objects of preventive medicine amongst the people, and where suasion fails this method is reinforced by means of warning notices followed by prosecutions and fines when advice on important health matters is disregarded.

Every member of the Health staff takes his share of house-to-house visits and in the four large centres the staff is assisted by volunteer members of an independent non-Government organisation founded in 1927 with Lady Slater as President.

The members of this society, The Gold Coast League for Maternal and Child Welfare, pay weekly or bi-weekly visits to compounds in Accra, Cape Coast, Sekondi and Kumasi and there can be no doubt as to the improvement in the standard of cleanliness and orderliness in such compounds as compared with the state of affairs even five years ago. Apart from lectures and addresses delivered during Health Weeks, these are given at other times during the year and at monthly meetings of the Welfare League referred to above.

Up to the present few pamphlets have been compiled on Health subjects and these have been issued to schools.

(*c*) Training of Health Personnel.

The Training School for Sanitary Inspectors only functioned spasmodically during the year owing to the reduction in staff and the need to disperse the majority of the Sanitary Inspectors-in-Training to outstations to assist in combating outbreaks of yellow fever. Theoretical training in the School has almost come to a standstill and the training officer has had to spend most of his time in training the subordinate staff whilst actively engaged in duties in the township proper.

(*d*) Recommendations for Future Work.

Owing to a fall in the revenue of the Colony it has not been possible to give effect to the recommendations for future work made in the report for 1931–32.

It does not appear to be likely that Government funds will be available for the carrying out of the recommendations in question in 1932–33.

Under the circumstances it is not proposed to make any recommendations.

P. S. SELWYN-CLARKE,

Acting Deputy Director
of Health Service.

IV.—PORT HEALTH ADMINISTRATION.

Port health work is carried out at Accra and Takoradi and to a limited extent at Ada, Axim, Cape Coast, Half Assinie, Keta, Saltpond, Sekondi and Winneba.

The work includes the maintenance of as high a standard of sanitation as possible in the town area. Particular attention is paid to the eradication of mosquitoes and rats and the prevention of the spread of infection from ship to shore and from shore to ship.

No ports were declared infected during 1931–32 but information was received of outbreaks of Yellow Fever and Plague in the ports of neighbouring administrations. Appropriate action was taken in accordance with the International Sanitary Convention of 1926.

Owing, probably, to economic depression the number of vessels entering Takoradi Harbour fell from 703 in 1930–31 to 523 in 1931–32. This decrease was also partly due to the restricted passenger service.

Some 1,433 deck passengers were landed at Takoradi and were examined at the disinfecting station where their clothes were disinfected and vaccination against Smallpox was carried out if necessary. This number compared with 3,088 in the previous 12 months.

In addition to the immigrants landed at Takoradi some 2,558 disembarked at Accra.

Intensive anti-rat campaigns were waged at Takoradi and at all the coast ports. At Takoradi 1,091 rats were trapped and five were found dead. In no port was a rat found to be plague-infected.

V.—MATERNITY AND CHILD WELFARE.

Maternity and Child Welfare work suffered a set back in 1931–32 owing to the reduction of staff consequent on the fall in the revenue of the Colony.

In October, 1931 the Christiansborg Welfare centre was temporarily handed over to a private medical practitioner and it ceased to function as a Welfare centre.

Later in the period under review the officers in charge of the Sekondi and Cape Coast Welfare centres were retrenched and the work has since been reorganised and carried on in a more restricted way.

It is anticipated that the call made in January, 1932, for additional retrenchment during the year 1932–33 will still further adversely affect Infant Welfare work during the coming year, but in order that this most valuable branch may not be allowed to regress owing to lack of financial support, schemes under the guidance of the Red Cross Society are already being considered and, it is hoped that those centres in which set back will take place may enter on a fresh career of usefulness under organized Voluntary effort.

The following table shews the attendance of children and expectant mothers at the various clinics.

Centre.	Attendances.			
	Children.		Expectant mothers.	
	1930–31.	1931–32.	1930–31.	1931–32.
Accra	30,637	28,441	2,129	1,826
Christiansborg	18,411	—	1,756*	—
Cape Coast	11,122	12,271	2,015	2,799
Sekondi	14,652	8,816	3,590	3,873
Shama	2,125	1,017	—	—
Koforidua	27,901	25,616	1,854	2,860
Kumasi	30,897	30,700	12,070	8,104
Total	135,745	105,861	23,414	19,463

*For nine months only.

The table given below gives the number of admissions to the Children's Hospitals at Accra and Kumasi. These Hospitals are not strictly welfare institutions but they are nevertheless doing most valuable work for the coming generation.

	1929–30.	1930–31.	1931–32.
ACCRA.			
Princess Marie Louise Clinic	368	516	589
KUMASI.			
Kumasi Welfare Centre	476	566	668

The work of the Maternity Hospital, Accra, is referred to in the next section.

The need for a Maternity Hospital at Kumasi both for dealing with obstetric emergencies and for the training of more midwives has already been noted in previous reports.

VI.—HOSPITALS, DISPENSERIES AND VENEREAL CLINIC.

TABLES AND RETURNS, ETC.

At Appendix A will be found a list showing all the Hospitals and Dispensaries in the Colony and Mandated Territory of Togoland, including the Infant Welfare Centres and Contagious Diseases Hospitals administered by the Health Branch.

Table V gives a combined summary of all cases (In-and Out-patients) treated by both the Medical and Health Branches in the Hospitals, Dispensaries and Prisons of the Colony and Protectorate. This table includes cases treated in the permanent Contagious Diseases Hospitals, and therefore gives all the cases treated during the year in Government institutions except the Lunatic Asylum. The Venereal Clinic figures are included in the Out-patients' table.

On Table V are based the diagrams showing the incidence of Infective and Other Diseases (facing page 4).

Table VI is an analysis giving separately the figures for the Medical Branch and the Health Branch.

The Health Branch figures are further dissected to show the cases treated at the Infant Clinics and the Contagious Diseases Hospitals.

The following five-year table shows the numbers of In-patients treated at the Hospitals of the three principal centres of the Colony.

Station.	1927–28.		1928–29.		1929–30.		1930–31.		1931–32.	
	European.	Africans.	European.	Africans.	European.	Africans.	European.	Africans.	European.	Africans.
Accra	286	2,724	312	2,606	300	3,087	310	3,572	273	3,645
Sekondi ...	224	794	224	868	216	1,050	161	1,157	250	1,075
Kumasi ...	151	2,412	203	2,508	213	2,137	173	2,360	166	1,954
Total ...	661	5,930	739	5,982	729	6,274	644	7,089	689	6,674

Average cost per Patient per diem.

The average daily cost per patient per diem for the principal Hospitals of the Colony during the past four years is shown below.

(These costs have been based on the expenditure for diets and provisions, fuel and light, medical comforts and kitchen staff only).

	1928–29.		1929–30.		1930–31.		1931–32.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
European Hospitals. (Accra, Kumasi, Tamale, Sekondi, Cape Coast, Axim, Winneba) average cost	5	4½	5	5	5	0¼	4	4
African Hospitals. (Gold Coast Hospital, Accra, Kumasi, Tamale, Sekondi, Cape Coast, Axim, Saltpond, Koforidua, Winneba) average cost	1	1	1	2	1	1½	0	7½

European Hospitals.

Financial stringency has prevented any extensions or enlargements being made during the year. At Tamale the female ward of the European Hospital was rendered mosquito-proof during the Yellow Fever outbreak.

African Hospitals.

The plan of securing a chain of well-built Hospitals round the Northern Territories, the execution of which began in 1929, is now nearing completion. Satisfactory Administration and Ward Blocks now exist at Wa, Lawra, Navrongo and Yendi, with an Administration Block at Bawku and Dispensaries at Bole, Zuarungu, Gambaga and Kete Krachi.

Accra.

The Gold Coast Hospital with its 227 beds and cots has more than maintained its former usefulness and has indeed treated more in-patients than ever before, as the following table will show :—

	1927–28.	1928–29.	1929–30.	1930–31.	1931–32.
Total Out-patients	11,040	13,786	14,638	14,191	13,261
Total In-patients	2,724	2,661	3,087	3,572	3,645
Major Operations	644	602	671	650	675
Minor Operations	364	295	436	670	709
Daily Average In-patients ...	207	208	233	222	223

The X-Ray Department has continued its very essential work but financial depression is reflected in a drop in the numbers for X-Ray examination.

The Venereal Clinic continues to function and the report of the Medical Officer in charge is summarised below :—

	1928–29.	1929–30.	1930–31.	1931–32.
Patients treated (old and New cases) ...	3,852	4,083	866	586
Gonorrhoea, male and female	1,599	1,772	766	539
Chancroid	80	66	28	24
Syphilis, male and female	1,161	1,318	72	22
Framboesia	—	—	—	—
Non-venereal	812	927	—	—
Injections N.A.B.	1,819	1,650	789	459
Injections B.S.T.	1,395	1,144	776	396
Injections collosol Iodine (vein)	—	1,460	966	313
Injections intramine (muscle)	—	1,137	812	—

A Yaws Clinic is held twice a week and a Gynaecological Clinic once a week. An Eye Clinic is becoming increasingly popular.

Nurse–Dispenser Scheme.

In January of 1932 a call took place for further drastic retrenchment in expenditure during 1932–33, and the scheme for training Nurse-Dispensers referred to at page 49 of last year's Report was in danger of having to be postponed or abandoned. It has, however, fortunately been possible to save it in essentials, although the Medical Tutor has had to be sacrificed. The scheme although somewhat curtailed, is progressing satisfactorily on lines already approved. (*Vide* Sessional Paper No. XV of 1930–31).

Government Medical Scholarships.

In October, 1930, the Regulations and Conditions governing the award of one or more scholarships (£300 per year, passages to England, outfit allowance, etc.) annually to suitable African candidates for the purpose of studying mdicine in the United Kingdom and obtaining a registrable qualification were gazetted.

The selected candidate would proceed at Government expense to the Prince of Wales College, Achimota, in order to study for the pre-medical examinations in Chemistry and Physics of the General Medical Council. When this was completed he would proceed to England to complete his studies at a selected medical school. He undertakes to return to British West Africa in order to engage in the practice of Medicine. He would have no claim to a Government appointment.

One scholar was selected for the year 1931, who is expected to complete his pre-medical examination in August, 1932, and proceed thereafter at once to England.

It is a matter of very great regret that the financial situation has prevented the grant of any scholarships for the year 1932.

The Report of the Dental Clinic appears at page 39.

Maternity Hospital, Accra.

This is one of the most important institutions on the Gold Coast, not only on account of the excellent maternity work carried on in it, but also because it is the only place at which midwives can be systematically trained. Extension of accommodation is urgently needed owing to the steadily increasing demand for admission.

During the year ten nurses qualified as midwives. Of these seven hold posts in the Health Branch, one remains to complete her training as a Nurse-Midwife whilst two have resigned and intend to practice privately with Government assistance.

A Midwives Ordinance setting up a Midwives Board for controlling and regulating the practice of midwifery came into force toward the end of the year.

In Appendix D will be found the Annual Report of the Maternity Hospital. A report on Still-births and Infant Deaths appears in the Report of the Laboratory Service.

Kumasi.

The African Hospital although of out-of-date type and lacking sufficient accommodation continues to do most excellent work as may be seen from the following table :—

	1928–29.	1929–30.	1930–31.	1931–32.
Out-patients—total	18,546	19,539	20,881	17,804
In-patients—total	2,508	2,137	2,360	1,954
Surgical operations, major	202	194	206	229
Surgical operations, minor	248	170	282	382
Average daily number in hospital ...	124.6	157.5	138.9	134.2

Navrongo.

The War Memorial Hospital, Navrongo, was completed just before the close of the year. This is a fine structure built for the most part from funds locally subscribed and was erected under the immediate and skilled supervision of Col. Whittall, Provincial Commissioner to whom great credit is due. A striking feature at the entrance is a wall into which has been built the actual Stones of Remembrance which local inhabitants had set up in the form of a Cairn as a memorial to their brothers who went to the great war. Each stone therefore represents a soldier from this area.

The hospital with seven male and four female beds will be opened early in 1932–33 and will serve a wide and thickly populated area (170 persons to each square mile).

Bawku.

Here a well-built Dispensary Block has been erected during the year. A ward will, it is hoped, be added during 1932–33. This area, like that round Navrongo, is also thickly populated.

Zuarungu.

The wretched building which has for long passed as a hospital here will be evacuated as soon as Navrongo is opened.

If, as is anticipated, a well planned and well-built dispensary is erected here later it will be possible to maintain a small medical unit but as a hospital station Zuarungu will be closed.

Travelling Dispensaries.

No. 1 Travelling Dispensary continued to work in the Lawra area during the whole year. A total of 5,700 patients (males 2,864 females 2,863) were treated.

No. 2, owing to shortage of staff could only be kept open for about seven months, during which 1,441 new cases were seen. It carried on work in the northern section of the Ho District of British Mandated Togoland.

Further retrenchment to take place during the year 1932–33 will mean that both dispensaries will have to cease their activities although it is hoped to keep No. 2 active till the end of August, 1932.

Mission Hospitals and Dispensaries.

Agogo.—This fine hospital, with 60 beds, which was opened towards the close of the previous year, did excellent work.

A popular feature of the equipment is the subaqueous system for the treatment of intestinal diseases. The plant was designed by the German doctor in charge (Dr. Hüppenbauer).

Kpandu.—The valuable work of the Mother Superior and Sisters of the Roman Catholic Mission at Kpandu continued to grow. The work has grown from some 5,500 attendances in 1927 to some 10,000 odd during the year.

Axim.—A dispensary and child welfare centre in charge of four trained French Sisters was opened in January, 1932, by the Roman Catholic Mission at Eikwe in the Axim District. This will be conducted on the lines of the Kpandu Centre, already referred to in the report for 1929–30, and is bound to be very helpful to the people of this area.

REPORT ON THE WORK OF THE DENTAL CENTRES DURING THE YEAR.

Staff.—Mr. Campbell, Dental Surgeon, did not return to the Colony on expiration of leave.

Mr. Donald, Dental Surgeon, proceeded on leave of absence on 13th May, and resumed duty on 26th October.

His duties were undertaken by Dr. G. R. Baxter (Health Department) who remained in Accra during the period.

Visits were paid to Cape Coast and Kumasi and extensive work was carried out among school children in Cape Coast and at Achimota College.

CLASSIFICATION OF PATIENTS TREATED.

	1928–29.	1929–30.	1930–31.	1931–32.
Officials—European	789	724	941	523
Officials—African	1,235	1,548	2,240	2,387
Total Officials	2,024	2,272	3,180	2,910
Non-officials—European	805	620	745	455
Non-officials—African	1,605	1,259	1,361	598
	2,410	1,879	2,106	853
Total treated	4,434	4,151	5,287	3,763

Dental operations including extractions, fillings, dressings, mechanical repairs etc., amounted to 7,488. The chief pathological conditions met with during the year were dental caries, abscess, pulpitis, periodontitis, pyorrhoea, gingivitis and septic roots; all cases amounted to 5,065 compared with 6,655 of the previous year. Dental caries accounted for 2,247 of this number, equivalent to 44 per cent.

VII.—PRISONS AND ASYLUMS.

(*a*) PRISONS.

Three local prisons were closed during the year, thus reducing the total to 21. The convict prisons at Accra, Sekondi, Kumasi and Tamale remain as before.

A kitchen has been constructed at Sunyani prison where the food will henceforth be prepared by the prisoners themselves and an adequate diet maintained.

At Yendi the reconstruction envisaged in the previous year's report has not yet materialised and the conditions prevailing leave much to be desired.

The diet scale given in last year's report has been maintained in all the larger prisons. In the smaller prisons where it is not always possible to secure the diet laid down, the Medical Officer has power to vary or alter it as he thinks fit.

In nearly every case the prisoners gained in weight during their period of confinement.

The average daily lock-up was 1,715.94 as compared with 1,825.89 in the previous year.

There were 26 deaths as compared with 24 last year equivalent to 15.1 per thousand. Of these deaths six occurred at Kumasi and four at Elmina. There were no deaths at Accra.

Year.	Total deaths.	Percentage of average daily lock-up.
1925–26	35	1.29
1926–27	30	1.85
1927–28	53	3.11
1928–29	39	2.16
1929–30	34	1.93
1930–31	24	1.31
1931–32	26	1.51

The main fact which emerges clearly from a perusal of the reports from individual prisons and from other evidence is that the health of the prisoners is indeed better than that of the bulk of the population.

As important instruments of social service and health improvement the prisons of the Gold Coast are to-day exercising a most valuable function.

(*b*) Asylum.

Central Asylum, Accra.

On the 31st March, 1932, the staff of the Colonial Lunatic Asylum was composed as follows :—

1 Alienist Officer
1 Head Attendant
1 Assistant Attendant
1 Matron
17 Male Mental Nurses
4 Female Mental Nurses.

In addition to the permanent Staff enumerated above the following were employed in a temporary capacity :—

1 Gatekeeper
1 Man (who attends to and cooks for the European patient).

It is regretted that Male Nurse Mr. H. L. Matti died on the 27th of August, 1931.

On the 31st March, 1932, the total number of inmates was 355, namely 240 men, 54 women and 61 male criminal lunatics.

The table subjoined shows admissions, deaths and discharges and allows of comparison with other years.

Central Asylum, Accra.

Number of inmates.	1928–29.	1929–30.	1930–31.	1931–32.
Remaining 1st April	241	246	275	326
Admitted during the year	84	104	131	127
Discharged during the year	32	28	32	35
Escaped during the year	1	2	1	4
Deaths	45	44	47	58
Remaining on 31st March	246	275	326	355

The general health of the Asylum community was not unsatisfactory considering the poor state of health of many of the patients when admitted. It was noted that the general health of the patients on admission was much poorer than in previous years. This is no doubt one of the consequences of the prolonged trade depression. Sporadic cases of bacillary dysentery occurred, particularly during the seasons when house-flies were prevalent.

No food deficiency diseases occurred and infectious diseases were limited to bacillary dysentery and a few cases of pulmonary tuberculosis.

Helminthic diseases were common—the majority of the patients showing a multiple infection of the alimentary system with the various species of nematodes. Taeniasis is no longer seen, however, since a certain type of fish obtained from the Accra market is now boiled instead of roasted as formerly was the custom.

It was hoped that the increased accommodation referred to in last year's report would have proved sufficient to deal with the number of admissions. Unfortunately admissions continue to increase and the problem of overcrowding is again arising.

The buildings are in a fair state of repair.

The diet is very satisfactory and individual tastes are catered for as much as possible. Certain innovations have been adopted which have resulted in greater variety in the dietary. The cost of food per patient per day for the month of March, 1932, was at the rate of $3\frac{3}{4}$d. and it is expected that this figure will remain practically stationary throughout the next financial year.

Some of the patients are employed in the kitchen, farm and garden of the institution and all unskilled labour within the confines of the Asylum is done by the inmates themselves under supervision.

The sanitary condition of the Asylum is fairly satisfactory as is shown by the absence of epidemics. The increase in overcrowding, however, gives cause for anxiety.

Night soil is now removed daily by a Town Council motor lorry. This obviates the necessity for constructing Otway pits on the edge of the European residential area.

Various minor improvements were made to the buildings during the year and a cricket field was constructed by the patients themselves for their own amusement.

The need for an enlarged and up-to-date Asylum for the Colony still remains.

The mental diseases from which the inmates suffered were as follows :—

	Male.	*Female.*
Imbecility	21	4
Imbecility with epilepsy	2	2
Insanity with epilepsy	4	2
Insanity with organic lesion ...	1	—
Trypanosomiasis	5	—
Cerebral syphilis	1	—
General paralysis of the insane ...	2	—
Confusional Insanity...	18	1
Involutional insanity	—	1
Senile dementia	6	1
Secondary dementia	53	8
Schizophrenia...	82	7
Non-systematised delusional insanity	45	10
Paranoia	2	—
Acute mania	15	5
Recurrent mania	14	2
Chronic mania	11	7
Acute melancholia	4	1
Chronic melancholia	5	1
Manic depressive insanity	3	2
Under observation	7	—
	301	54

VIII.—METEOROLOGY.

Tables giving Meteorological observations at Korle Bu and at five other stations appear in the Returns on page 68.

IX.—SCIENTIFIC.

(*a*) Annual Report of the Laboratory Service 1931–32.

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ANNUAL REPORT OF LABORATORY SERVICE 1931–1932.

I.—General Remarks.

This report covers the period 1st April, 1931 to 31st March, 1932.

The arrangement of the reports follows that of previous years wherein the more technical matter is presented in the form of appendices and tables of statistics are placed at the end.

The Staff.—There has been considerable reorganisation during the period under review to meet the demands of the retrenchment programme. The Establishment, when the programme of retrenchment is complete will consist of the following :—

European Staff.

Deputy Director, Laboratory Service.
Appointment held in abeyance.
Senior Pathologist.
Two Pathologists.
Two Laboratory Assistants.

African Staff.

Eight Laboratory Attendants.
Three serving in outstations.
One Second Division Clerk.
One Headman.
Five indoor and three outdoor Labourers.
One Messenger.

The Laboratories.—The main Institute at Accra remains open and is concerned mainly with routine work. Some research on Plague strains and Blood cytology has been done by Dr. A. S. Burgess. These form subjects of appendices. The Gold Coast Hospital Laboratory closed down on 31st December, 1931. The Sekondi and Kumasi Laboratories have been taken over by the Medical Department and one Laboratory attendant has been seconded to each. The Yeji Laboratory which existed mainly as a field unit for tsetse and trypanosomiasis research was closed in May, 1931. The Motor Laboratory was condemned by Board of Survey in February, 1932 as an obsolete vehicle and was handed to the Transport Department.

Publications.—The following papers have been published during the year.

Saunders, G. F. T. ...	The adhesion phenomenon in trypanosomiasis. *West African Medical Journal*, October, 1931.
Saunders, G. F. T., and Morris, K. R. S.	The distribution of Human Trypanosomiasis. *West African Medical Journal*, January, 1932.
Taylor, C. J. S. O., and Russell, H. M.	Blackwater Fever and Naphthalene Poisoning. *West African Medical Journal*, January, 1932.

II.—Report of Routine Divisions.

Yaws and Syphilis.—The percentage of positive Wassermann tests at Accra rose from 43 for last year to 52.5 for this year. This apparent rise may be due to the greater number of tests called for because the subjects had symptoms attributable to yaws or syphilis.

The following table gives the results of Kahn, Sachs Georgi and Wassermann tests done at Accra between October, 1921 and April, 1932. The figures include all cases where a record of the age of the patient has been kept.

Age period in years.	To 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	Total all ages.
No. of Tests	214	756	1,503	751	268	89	27	3,608
Percentages positive—								
Males	47	47.4	62.8	58.2	52.6	45.9	52.4	56.3
Females	45.6	50.9	39.8	45.7	37.9	26.6	33.3	43.3
Total	46.3	47.4	53.5	53.5	47.4	42.7	48.1	51.3

Bacteriological Examinations.

(*a*) *Water Supplies.*—The examination of water supplies has been continued throughout the year and the results shown in Table III indicate that the water supplies of Accra, and Sekondi areas are remarkably free from contamination. The Kumasi supply is not yet satisfactory and a change can be expected when a pipe-borne supply is provided.

(*b*) *Dysentery group. Bact. dysenteriae.*—Flexner has been, by far, the commonest non-lactose-fermenting organism cultured from cases of Bacillary Dysentery, being isolated 30 times from a total of 152 faeces cultured at Accra. The other organisms causing dysentery were met with only occasionally.

(*c*) *Salmonella group and related organisms. Bact. typhosum,* was isolated twice from faeces and once from the blood in a septicaemic case. Bact. paratyphosum C was isolated once from the urine. Other organisms of the Salmonella group, not yet identified, have been isolated from two cases of septicaemia, from pus from an Empyema and from a case of meningitis.

(*d*) *Other septicaemias.*—In a series of 48 Blood cultures streptococci were isolated on four occasions and *B. coli* on one occasion.

(*e*) *Diphtheria.*—Three proved virulent strains of *C. diphtheriae* were isolated during the year.

Identification of Reptiles.

Species.	Donor.	District.
Chlorophis carinatus	Mr. G. C. Beavan ...	Kumasi.
Chlorophis irregularis	Dr. Saunders	Lawra.
Naia melanoleuca	Mr. Brent	Koforidua.
**Naia melanoleuca*	Dr. Vaughan	Sunyani.
Naia nigricollis	Dr. Vaughan	Sunyani.
Bitis nasicornis	Mr. G. C. Beavan ...	Kumasi.
Bitis gabonica	Dr. Vaughan	Sunyani.
Causus rhombeatus...	Dr. Vaughan	Sunyani.
Causus rhombeatus...	Dr. Thomas	Kintampo.
Causus rhombeatus...	Dr. Saunders	Lawra.
Psammophis regularis	Dr. Vaughan	Sunyani.
Psammophis regularis	Dr. Walker	Nsawam.
**Gastropyscis smarydina*	Dr. Vaughan	Sunyani.
**Gastropyscis smarydina*	Dr. Thomas	Kintampo.
Leptodira hotambaeia	Dr. Saunders	Lawra.
Leptodira hotambaeia	Dr. Walker	Nsawam.
Lycophidium semicinctum...	Dr. Robinson	Accra.
**Dipsodomorphus blandingi*	Dr. Martyn-Clarke ...	Koforidua.
**Dipsodomorphus blandingi*	Dr. Vaughan	Sunyani.
**Dispholictus typus*	Dr. Thomas	Kintampo.
**Mehelya poensis*	Dr. Vaughan	Sunyani.

*Identifications by the British Museum.

Correction :—In last year's report the reference to *Amphisboena peters*, Boulenger in the list given in Appendix J should appear under the order SAURIA.

Encephalitis (Note provided by Dr. A. S. Burgess).

In the list of post-mortem examinations (Appendix II) seven cases have been classified as encephalitis. The diagnosis rests on the discovery of perivascular cell infiltration in sections of the brain. Six of the cases were hospital patients and records of examinations made during life throw some additional light on the condition. In four of the six the cerebro-spinal fluid gave a negative Wassermann reaction, one a double positive and the remaining one was not examined but the blood was double positive. Of the four negative cerebro-spinal fluids cell counts were done in three the results being 94,410 and 240 cells per c.m.m chiefly lymphocytes. No trypanosomes were found in any of the cases, but in one, morula cells were seen in brain sections. These cases are provisionally regarded as due to trypanosomiasis.

G. ROBINSON,
Pathologist.

APPENDIX A.

Blackwater Fever.

By A. S. Burgess, M.D.

Blackwater fever in natives appears to be commoner than formerly, as five cases were observed during the year. Two were quickly fatal, one was very mild and transient and the remaining two, both of which were admitted to the Princess Marie Louise Hospital, were unusual in being of a long continued relapsing type, and deserve a brief description. One of these two cases was that of a boy five years old. Haemoglobinuria began after a dose of quinine and persisted with intermissions for 19 days. It was present on eight of the 19 days for part of the day only and was never strongly marked, the affected urine rose red in colour. There was never a rigor, though some fever was present throughout the illness. No malaria parasites were found, but there were pigmented leucocytes at the onset. Two leucocyte counts gave the figures 7,000 and 12,000. Jaundice was very slight. In 12 days the haemoglobin percentage fell from 59 to 27. The illness ended in recovery. Quinine was not given.

The second relapsing case was that of a boy 14 years old. During a period of nine days, after admission haemoglobin was present in the urine on six days, usually in two or three morning urines only and in small amount. When no haemoglobin was present urobilin was easily detected in all the specimens examined. The fact that the patient was seen 13 days before admission and found to be jaundiced suggests that the duration of the illness was longer than nine days. On this occasion the urine contained urobilin, but no haemoglobin or bile.

The two fatal cases presented no unusual feature. It may be worth noting however that both gave high leucocyte counts, viz. :—20,500 and 50,000 respectively.

Naphthalene Poisoning simulating Blackwater.—This case showed marked haemoglobinuria the urine being nearly black and was at first regarded as one of blackwater fever. Questioning elicited the fact that the patient had taken two naphthalene balls as medicine and the view that this caused the haemoglobinuria was supported by the fact that he was never very ill and recovered rapidly on admission to hospital.

The case is to be published by Dr. Helen Russell and Dr. Taylor in the *West African Medical Journal.*

APPENDIX B.

Notes on Blood Diseases.

By A. S. Burgess, M.D.

Anaemia of Pregnancy.—Ten cases of anaemia in which the haemoglobin percentage was 30 or less were associated with pregnancy. The colour index ranged from 0.9 to 1.3, the average being 1.12. Megaloblasts (cell at least 11μ and and neucleus at least 7.5μ in diameter) were found in five of the cases, but very prolonged differential counts were not made. None of the cases were fatal.

The Haemoglobin percentages in these cases were approximately 23, 30, 30, 27, 23, 28, 21, 30, 22, 23.

Sickle Cell Anaemia.—Two cases of this condition were recorded.

The first case, which was discovered by Dr. Helen Russell, was that of a boy aged about 10. The sickle shape of the red cell was noticed in dried films but increased on keeping the blood in fluid condition for a few hours. The number of red cells was 2,000,000 per c.m.m. and leucocytes 13,200, the haemoglobin being 43 per cent. The Van den Bergh tests gave a direct negative and an indirect of 3.5 units. The red cell fragility was markedly diminished. Haemolysis began at a salt concentration of 0.32 per cent and was complete at a concentration of 0.16 per cent, the control figures being 0.42 and 0.34 per cent. Certain members of the patient's family showed a similar condition as regards the shape of the red cells. An account of the case by Drs. Russell and Taylor is to be published in the *West African Medical Journal.*

The second case was in a native boy aged six years. In ordinary thin films a few fusiform red cells were noted, but after keeping the blood in fluid condition for 24 hours nearly all the red blood corpuscles became sickle shaped. In this case the figures for fragitity were 0.36 to 0.18 per cent salt solution, the control figures being 0.42 and 0.3. A count gave the following figures. Red cells 2,680,000, Leucocytes 12,000, Haemoglobin 39 per cent.

Reticulocytes 15 per cent of reds. There were nine normoblasts per 100 leucocytes. Coagulation occurred very readily. The patient was an emaciated child, and was admitted with fever, tuberculosis being suspected at first.

Leukaemia.—Only one case of leukaemia came under observation and that was of the myeloblastic type.

The patient, an adult African male, had a sloughing ulcer of the fauces and died after three days in hospital. The red cells numbered 870,000 and the leutocytes 22,500, the haemoglobin being 24 per cent. A differential count gave the following result.

Polymorphonuclears	1 per cent.
Myelocytes	42.5 ,,
Myeloblasts	38 ,,
Lymphocytes	16 ,,
Large mononuclears	2.5 ,,

Normoblasts were very scanty and Gumprecht's shadows about 40 per 100 leucocytes.

There was considerable difficulty in distinguising myelocytes from myeloblasts, as many cells had all the characters of myeloblasts except that they contained pink granules.

One observer prefered to call the majority of the leucocytes " premyelocytes."

It was at first assumed that these granules were eosinophil but the oxydase test (nitroprusside-benzidine) followed by Giemsa staining showed that in some cells they did not give the oxidase reaction and were therefore not eosinophil but azurophil. The cells in question therefore had all the characters of myeloblasts.

APPENDIX C.

Plague Experiments.

By A. S. Burgess, M.D.

A few experiments on plague were performed in the latter part of the year.

The stock vaccine was subjected to test when a year old, pouched rats (*C. gambianus*) being used as test animals. This vaccine consisted of a six weeks' broth culture killed by the addition of carbolic acid 0.75 per cent. Two doses of 0.5 and 1.0 cc were given hypodermically with an interval of a week and the animals were infected a week after the last dose. The results are given in the table below. Although the conditions of storage were not ideal, as the Frigidaire in which the vaccine was kept had to be opened frequently, the result, viz., a survival rate of 53 per cent compares favourably with that of previous experiments. Unfortunately this vaccine was not tested when it was first prepared, but undoubtedly it has good keeping qualities.

A few experiments were made with a culture rendered relatively avirulent by passage through a partially immune *C. gambianus*. It was found that the virulence was reduced not only for *C. gambianus* but also for guinea pigs and white rats, although in the case of the white rat the reduction was not very marked.

The white rat is not a suitable animal for plague experiments because when it dies after plague infection it is sometimes impossible to demonstrate *B. pestis* in the cadaver either by film or culture even though the infecting organism is highly virulent.

This peculiarity has been previously recorded and was also observed in my experiments. It is most common in animals which have not died very acutely.

Some experiments were made on the protective effect of vaccination against infection with avirulent culture, vaccine prepared from virulent culture as well as vaccine homologous with the infecting strain being tried. The results are given in the table and it will be noted that the protective effect is poor.

In estimating degrees of immunity it is usual to consider only the percentage of survivors in comparison with that of the controls, but possibly a better index is obtained by considering the survival periods (" S.P. " in the table) of all the animals, allotting an arbitary period (17 days in the case of *C. gambianus*) to survivors.

TABLE.

VACCINATION EXPERIMENTS WITH *C. gambianus*.

Vaccine.	*Infection.*	*Vaccinated Animals.*			*Control Animals.*		
		Number Tested.	Per cent Survivors.	Average S.P. days.	Number Tested.	Per cent Survivors.	Average S.P. days.
1. Virulent	Virulent ...	15	53	13.0	6	0	2.4
2. Virulent	Avirulent (*a*)	17	63	13.3	6	17	9 0
3. Virulent	Avirulent (*b*)	18	72	14.5	8	50	12.9
4. Avirulent (*a*) ...	Avirulent (*a*)	19	68	13.8	18	33	11.3

It will be noted that two avirulent cultures were used. The one designated (*b*) was obtained by injecting (*a*) into the peritoneal cavity of an immune white rat and recovering the culture from the peritoneal exudate after three hours. This was done with the object of reducing virulence still further and the experiment seems to have been successful. As ageing may have had some influence it may be mentioned that there was an interval of about a month between successive experiments and that cultures were kept at room temperature.

It may be mentioned that some animals died in the immunization period, but as these accidents diminished in number as the attendants acquired skill in handling the animals they would not appear to be a reliable index of the toxicity of the vaccine.

As regards the object of the experiments it has been shown in previous work that animals which recover from infection with partially virulent culture are completely immune, but that vaccination with completely avirulent culture cannot be relied on. It was hoped that preliminary vaccination would render infection with an organism of low virulence safe and that complete immunity would be conferred in this way. This hope, however, was not realised as preliminary vaccination gave very little protection against a relatively avirulent organism.

APPENDIX D.

OBSERVATIONS ON STILL-BIRTHS AND INFANTS.

DEATHS IN THE MATERNITY HOSPITAL, ACCRA.

BY DRS. H. M. AND B. A. S. RUSSELL.

During the ten months over which the observations were made 69 infants were investigated.

The Wassermann reaction rate for the mothers was 41.9 per cent.

The Wassermann reaction rate for all the Maternity Hospital cases over the same period was 36.8 per cent.

Post-mortem examinations were made in 21 of the 69 infants and in no one was macroscopic or microscopic evidence of congential syphilis found.

Of the 69 infants, 52 were still-born, and 17 died within ten days of birth.

Still-births.

The Maternal Wassermann reaction rate of the 52 still-born infants was + in 37 per cent, and 24 per cent were + + reactions.

The causes of the still-births were as follows :—

32 obvious obstetric causes
8 Toxæmias of pregnancy
1 native medicine
1 twin
10 not satisfactorily accounted for.

The Maternal Wassermann reaction rate of the 10 not satisfactorily accounted for was 55 per cent, and 44 per cent were + + reactions.

This merely confirms the observations of Dr. Butler and Dr. Summerhayes that in the obscure still-birth group the Wassermann reaction is higher than usual.

Infant Deaths.

Seventeen infants died within ten days of birth.

The Maternal Wassermann reaction was positive in eight of 15 of these and three of the eight were + + reactions.

Post-mortem examinations were made in eleven of these infant deaths. Each case is briefly summarised in the following table :—

No. W.R.	*Clinical notes.*	*Survival.*	*Pathological notes.*
623 —	White asphyxia, died with hyper pyrexia.	12 hrs.	Congested, oedematous brain, tear falx cerebri.
4 +	Long labour, fits and jaundice ...	5 days	Some oedema brain.
46 —	Premature, mother had obscure fever	1 day	Little of note.
50 +	Blue asphyxia, fits	2 days	No tears of meninges, some efusion on to brain over caput area.
47 +	Gastro-intestinal upset, followed by meningitis.	10 days	Purulent meningitis.
119 —	Long labour, fits	1 day	Tears of tentorium cerebelli, large haemorrhages middle fossae of skull.
459 + +	Slight asphyxia, tires	4 days	Small tear tentorium cerebelli blood in posterior fossa.
523 —	Born asphyxiated, had fits	5 days	Congested, oedematous brain.
668 ?	Asphyxia, not well from birth ...	5 days	Tears of tentorium cerebelli clot in posterior and middle fossae.
654 ?	Premature, mother eclampsia, became jaundiced.	7 days	Premature and jaundiced.
809 —	Cyanosed at birth, collapsed in 12 hours	12 hrs.	Tears tentorium cerebelli blood in posterior fossa.

As has been said before in no one of these infants was evidence of congenital syphilis found.

Maturity of Infants.

It is generally agreed by the Officers of the Maternity Hospital that the babies are smaller than European babies at birth.

Of 29 infants examined in some way by Dr. H. Russell 22 were completely examined and ten were considered mature.

Of these ten apparently mature infants the following details are recorded :—

Average weight ... ... 7.0 lbs. 6 ozs.
Average length ... ... 20.8 inches.

In nine infants.

Average centre of ossification lower end femur ... ... 0.24 inch.
Average centre of ossification upper end tibia ... ... 0.16 inch.
Average centre of ossification cuboid ... ... 0.009 inch.
being completely absent in four infants.

One infant weighing 8 lbs. 3 ozs. showed none of these centres of ossification.

In connection with the observation that the average infant born in the Maternity Hospital in Accra appears small to European workers, it is interesting that of these ten apparently mature children only two were delivered normally although seven of the mothers were multiparae.

APPENDIX E.

Summary of studies in Relapsing Fever.

By H. M. Russell, m.d.

I.—THE PATHOLOGY OF THE SPLEEN IN RELAPSING FEVER.

Summary.

1. The pathology of the spleen in 15 cases of relapsing fever is summarised.

2. It is concluded that the miliary lesions of the spleen, which consist of a zone of congestion and cell infiltration round the malpighian bodies, are charateristic of human relapsing fever. They appear to be the most important guide to the pathologist in the differential diagnosis of fatal relapsing fever, short of actually finding spirochaetes.

3. The miliary lesions are well seen in sections of the spleen stained with haematoxylin and eosin.

4. In sections stained for spirochaetes, the spirochaetes may be detected breaking up in the lesions after they have disappeared from the circulation. Spleen films, and sections, are therefore, the most profitable to examine in the hope of finding recognisable spirochaetes.

5. It appears that the miliary lesions of the spleen noticed in the Gold Coast cases are those described by Griesinger in Egypt in 1850 in fatal cases of " Bilious typhoid " fever.

II.—EXPERIMENTAL RELAPSING FEVER, ACCRA, 1931.

Summary.

1. The alternation of types of spirochaetes described by Cunningham occurs in *C. gambianus* only on passage of the strain at the relapses. The first animal receiving the inoculation of a relapse spirochaete must be discounted as a laboratory artifact in the study of alternation of types, because it is to some extent passively immunised by the inoculation to the type of spirochaete with which it is expected to relapse.

2. Simultaneous infection with two types of spirochaetes have been produced experimentally, and the spirochaetes have been separated from one another again by absorption.

3. In a few observations on hereditary immunity the young of *C. gambianus* were found to be immune to the type of spirochaete with which the mother was infected shortly before the birth, but susceptible to any other type. There is evidence that some immunity may be acquired from the milk. There is no evidence that inherited immunity is due to an infection of the young in utero.

4. *C. gambianus* rats are protected for at least six months by a vaccination with dead spirochaetes in serum, and the spirochaetes are the antig nic substance in these vaccinations.

5. The immunity to any type of relapsing fever spirochaete is probably lifelong in *C. gambianus*, and has been demonstrated two years after infection.

6. Details of two laboratory infections are recorded.

7. Several attempts to pass living relapsing fever spirochaetes through a Berkfeld " N " filter failed, no rat receiving the filtrates became infected.

8. From various observations it appears that the relapsing fever spirochaetes has the capacity of endless serological variation.

9. The possible analogy of the alternation of types of spirochaetes to bacterial variation is discussed briefly.

TABLE I.

Statistical Return from the Routine Divisions.

Inclusive of repeat Examinations.

	Medical Research Institute Accra.	Sekondi.	Kumasi.	Gold Coast Hospital.	Total.
Examinations of blood :—					
(*a*) For parasites, total	2,641	2,028	2,154	2,168	8,991
1. Malaria	773	957	333	413	2,476
2. Relapsing fever	1	1	12	6	20
3. Trypanosomiasis	4	1	73	1	79
4. Microfilaria	16	5	119	52	192
(*b*) Differential and other counts ...	96	85	18	123	322
(*c*) Agglutinations	112	29	15	—	156
(*d*) Wassermann and Kahn tests ...	2,687	431	116	—	3,234
(*e*) Blood cultures	48	9	—	—	57
(*f*) Chemical examinations total ...	155	—	9	14	178
1. Van den Bergh	13	—	2	14	29
2. Urea	105	—	—	—	105
3. Dextrose	33	—	7	—	40
4. Miscellaneous	4	—	—	—	4
Examinations of faeces, totals	1,528	736	1,187	2,015	5,466
(*a*) General examinations	1,376	730	1,167	2,015	5,288
(*b*) Bacteriological examinations ...	152	6	20	—	178
Examinations of urines, totals	785	896	1,381	2,237	5,299
(*a*) General examinations	698	896	1,381	2,237	4,212
(*b*) Bilharzial infections	37	33	121	110	301
(*c*) Bacteriological examinations ...	87	—	—	—	87
Examinations of sputa	213	219	154	387	973
Examinations of cerebro-spinal fluid ...	32	7	—	55	94
Miscellaneous examinations	598	184	268	866	1,916
Histological examinations...	728	20	—	—	748
Post-mortem examinations	87	85	*	72	244
Medico-legal examinations	22	1	2	—	25
Bacteriological examinations of drinking waters	218	256	14	—	488
Animal examinations and inoculations ...	383	—	4	—	387
Rats examinations	2,925	1,999	397	—	5,321

*Post-mortems done by Medical Officer.

In addition to the routine work done by the staff working at the Institute at Accra, laboratory attendants at Sekondi and Kumasi continue to do simple examinations under the direction of the S.M.O. of the station. In the near future Tamale will be similarly supplied with an attendant.

TABLE II.

Post-mortem Examinations.

	Accra.	*Sekondi.*		*Accra.*	*Sekondi.*
Paratyphoid C	2	—	Acute inflamation of Intestinal tract	—	1
Malaria	1	—	Hepatic cirrhosis	8	—
Malaria, cerebral	1	—	Hepatic abscess	4	—
Dysentery, amoebic ...	2	—	Hepatic necrosis	1	—
Dysentery, bacillary ...	—	3	Hepatitis	1	—
Trypanosomiasis	1	—	Peritonitis	3	5
Tuberculosis, pulmonary ...	4	8	Nephritis, acute	1	—
Tuberculosis of lymph glands	1	—	Nephritis, subacute diffuse	—	1
Tuberculosis, generalized ...	2	—	Nephritis, chronic	5	—
Septicaemia	1	2	Pyonephrosis	1	—
Gonococcal septicaemia ...	—	1	Uraemia following pyonephrosis	—	1
Pyaemia	6	—	Puerperal toxaemia ...	1	—
Cancer of liver	1	—	Osteomyelitis of mandible	1	—
Cancer of rectum	1	—	Congenital debility ...	3	—
Cancer of lung	1	—	Premature bith	7	—
Cancer of bladder	1	—	Still-birth	10	—
Epithelioma of leg	1	—	Unbilical haemorrhage ...	1	—
Avitaminosis	1	—	Melaena neonatum	1	—
Leukaemia, myeloblastic ...	1	—	Birth injuries	10	—
Pyrexia of unknown origin	2	—	Icterus neonatorum ...	2	—
Cerebral congestion ...	1	—	Marasmus	1	—
Cerebral haemorrhage ...	1	4	Toxic jaundice due to organism of salmonella group	1	—
Encephalitis...	7	1	Hanging	4	3
Meningitis, cerebro-spinal	1	—	Poison by phosphorus ...	1	—
Meningitis, pneumococcal	3	1	Poisoning by cyanide ...	1	—
Meningitis, streptococcal ...	—	1	Poisoning by lysol	1	—
Meningitis, purulent with no organism found ...	3	—	Drowning	3	4
Cereral abscess	1	—	Burns, shock from	—	1
Glioma of brain	1	—	Wound by firearms ...	4	2
Microcephaly	1	—	Knife wounds	3	—
Pericarditis	3	—	Fractured skull	5	3
Chronic endocarditis ...	1	—	Fractured ribs	1	—
Atheroma of coronary arteris	1	—	Fractured spine	3	—
Atheroma of aorta and occlusion of coronary arteries	—	1	Rupture of spleen	1	1
Aneurism	3	1	Shock due to fall	1	—
Rupture of coronary sinus of the heart	—	1	Head injuries	1	—
Myocardial degeration ...	—	5	Shock and haemorrhage from injuries	4	5
Bronchitis	1	—	Shock and haemorrhage from ruptured liver	—	1
Broncho-pneumonia ...	3	6	Asphyxia	—	2
Pneumonia, lobar	4	12	Suffocation from shock of anaesthetic	—	1
Pneumonia, unclassified ...	2	—	Undiagnosed	4	—
Pleurisy and pneumonia ...	—	1			
Gangrene of the lungs ...	1	—			
Cancrum oris	1	—			
Intestinal obstruction from adhesions	1	—			
Enteritis	3	—			
Intussusception	1	—			

TABLE III.

Bacteriological Examinations of Water Supplies.

Source.	Negative.	*B. coli* present. Specimens enumerated according to smallest volume (c.cs) in which *B. coli* found.					Totals.
		100	10	1	0.1	0.01	
Accra Supplies.							
Storage reservoirs	17	3	2	—	—	—	22
Final filters	77	3	1	—	—	—	81
Laboratory tap...	50	2	1	—	—	—	53
Soda waters	44	5	5	—	—	—	54
Other supplies examined at Accra	6	—	—	2	—	—	8
Kumasi Supplies.							
Waters	4	1	3	2	—	1	11
Soda waters	3	—	—	—	—	—	3
Sekondi Supplies.							
Raw water	14	5	12	7	4	—	42
Final filters	41	—	2	—	—	—	43
Taps	44	—	—	—	—	—	44
Soda waters	1	—	—	—	—	—	1
Other supplies examined at Sekondi.							
Takoradi	84	1	—	—	—	—	85
Cape Coast	27	3	—	—	—	—	30
Nsuta	12	—	—	—	—	—	12

IX.—SCIENTIFIC.

(*b*) Annual Report of the Analytical Chemist.

The number of samples dealt with was 1,534 and comprised the following :—

Examinations for poisons.

Human viscera	13	
Stomach and intestinal contents	7	
Blood	3	
Native medicines	22	
Drugs	8	
Miscellaneous	4	
	——	57

Medical and Health Services.

Potable waters	8	
Foods	13	
	——	21

Police.

Drugs	17	
Illicit spirits	133	
Jewellery	17	
Miscellaneous	6	
	——	173

Customs Department.

Whisky	33
Brandy	18
Geneva	20
Gin	5
Methylated spirits	72
Rum	12
Wine	248
Medicated Wine...	22
Sherry	20
Port	9

Customs Department—contd.

Vermouth	...	33
Liqueur	...	13
Beer and Stout	...	87
Patent medicines	...	231
Perfumery	...	190
Polish	...	31
Paint and Varnish	...	23
Aerated Water	...	18
Sweetened condensed Milk	...	26
Unsweetened condensed Milk	...	36
Milk Powder	...	11
Miscellaneous	...	125
		1,283
Total	...	1,534

The analyses of human organs, stomachs and intestinal contents and blood were made in connection with ten deaths from suspected poisoning.

In a case of suicidal death caused by sodium cyanide, hydrocyanic acid amounting to the equivalent weight of 136 grains of commercial sodium cyanide was recovered from the stomach contents. 66 grains of sodium cyanide were found in a tumbler used by the deceased.

A trace of copper was found in a placenta submitted for the detection of the presence of lead (negative result) in a suspected case of abortion.

A fluid drachm of lysol was recovered from the stomach washings in a fatal case of poisoning by this disinfectant and traces of it were present in the stomach after death.

An exhibit in a case of suicide by phosphorus poisoning was a blue paste which was found to contain 1.75 per cent of free (yellow) phosphorus.

Neither free phosphorus nor particles of Prussian Blue were found in the stomach and intestinal contents, three days having elapsed between the ingestion of the paste and death. A portion of the liver was also tested for the presence of free phosphorus with negative result.

No native medicines of chemical interest or importance were submitted during the period under review; in most instances, depending on the condition or amount of material sent, botanical identification by the Agricultural and Forestry departments whose aid has been sought for this purpose was impossible.

The 133 samples of spirits submitted by the Police were exhibits in 30 cases of illicit distillation from 19 different localities in the Colony, Ashanti and British Togoland.

The greater number of these spirits contained a higher percentage of alcohol than any imported potable spirit and nearly all were characterised by a high content of volatile acidity, but in a few cases there was evidence of the use of some method of neutralising the acidity before distillation thereby producing a much "cleaner" spirit.

The number of samples examined for the Customs Department was again greater than that of any previous year.

IX.—SCIENTIFIC.

(*c*) Reports of Interesting Cases by Medical Officers.

I. Acute colitis due to Ascaris Lumbricoides simulating Dysentery.
II. Quartan Malaria and Mania.
III. A peculiar case of Amoebiasis.
IV. Two cases of snake bite.
V. A case of rheumatic fever.

I.—Acute colitis due to Ascaris Lumbricoides simulating Dysentery by Frederick M. Purcell, Medical Officer, Keta.

The following case is recorded as being noteworthy.

Baby, male, aged 1½ years, brought to hospital by mother who stated baby has abdominal pain, increased frequency of the bowels with blood and mucus in the stools.

Symptoms commenced the previous evening. In the morning one round worm was passed.

On naked eye examination a stool looked typical of either of the common types of dysentery.

Microscopical examination showed mucus and blood cells. The cells were mainly unaltered red cells with an apparently normal proportion of leucocytes—an early acute colitis.

There were no amœbæ or cysts; microphages were not seen. The only evidence of parasitic infection was occasional ascaris ova.

01 Ricini and 01 chenopodium M.10 were administered and repeated later.

On the next morning baby passed a tangled knot of nearly full grown ascarides lumbricoides. The dysenteric symptoms stopped forthwith.

When unravelled the worms numbered twelve.

There was no recurrence of symptoms.

Two cases similar to this have been seen during the last two years.

The combination of ascaris ova and dysenteric symptoms puzzled one. Microscopically, the stool was not typical of either type of dysentery—the bleeding having been due, apparently, to mechanical irritation of the bowel by the worms producing an acute colitis.

II.—Quartan Malaria and Mania by Sam L. Brohier, Senior Medical Officer, Koforidua.

In a former Annual Report of the Gold Coast Medical Department, under the title "Chronic Malaria and Mania"—the notes of certain cases of apparent lunacy sent to me by the Police for examination and certification appeared, in all of which crescent parasites were found and the subjects, after treatment were discharged as normal.

The following case in the same category is interesting particularly so as the causative parasite appeared to be one of quartan malaria.

1st March, 1932, Tuku Basaberimi, M.53 a mild, bearded and venerable person was brought to hospital to be certified as a lunatic. The patient was by trade a fish seller. He had proceeded to Keta to purchase fish, returning on or about the 23rd February to Jumapo. On the 24th he proceeded to Tafo to sell his fish, felt ill and took to his bed, shewing evidence of mental derangement. Word of this having reached his people at Jumapo they proceeded to Tafo and brought

the patient back to Jumapo on the 26th. Shortly after his return the patient apparently became more violent, collected a mass of stones, seized an axe and barricaded himself inside his room. Appearing at the window he brandished his axe, threw stones at various people and at imaginary objects and threatened to murder anybody who came to arrest him.

On the 29th February, he became silent and one or two of the more venturesome approached his window and engaged his attention whilst others forced an entry into the room. No resistance was offered and he was taken by his people to the Police and brought up before me on the 1st March.

The patient appeared depressed and rather dazed. Would not, or rather could not, reply to any questions put. He seemed to appreciate some of the words used by the interpreter questioner, but was unable to reply. T.97, spleen negative. A blood smear was taken and evidence of a double quartan infection was obtained ; the same blood film shewing the presence of gametocytes and of sporulating bodies of the quartan parasite.

1*st March*, 1932. Admitted to hospital—Quinine intramuscularly—T.99.2.

2*nd March*, 1932. M. Temp.97—E. Temp.99. Is able to talk, but is not talking sense. Quinine injection repeated.

3*rd March*, 1932. M.T.97.6, E.T.98. Refuses medicine by mouth, noisy at night—but not offering violence to anyone. Quinine by injection.

4*th March*, 1932. M.T.98.4—Would not permit evening temperature to be taken. Quinine by injection.

5*th March*, 1932. M.T.97.2, E.T.97.6, Pt. is quite quiet. Is still unable to maintain a conversation. From this onward the patient steadily improved, appreciated the fact that he was in hospital but could not remember any circumstance with regard to his admission to hospital.

10*th March*, 1932. Appears normal—desires to leave.

12*th March*, 1932. Normal—discharged.

III.—A peculiar case of Amœbiasis by Sam L. Brohier, Senior Medical Officer, Koforidua.

The following case is of interest if only to shew one of the phases of a chronic amœbic dysenteric infection which is likely to lead one astray.

A female aged 44, brought the following note to me from the Medical Officer of an adjacent station :—

> " Ill one week with tender mass in right iliac fossa, bowels constipated, mass dull on percussion, (?) fluctuates, patient sweats, there is a history of recent abdominal pain. I have told the husband you would take the patient into hospital for treatment as the case is of some gravity." Diagnosis appendix abscess. Temp. 99.6, P. 112.

The patient was admitted to hospital. There was a definite sausage-shaped slightly movable mass in the right iliac fossa, not particularly tender, and lying subjacent to the skin which did not appear to be in any way involved in the growth ; no evidence of inflammation or of œdema.

Having had experience of similar cases with tumour in the left iliac fossa and in other situations, I diagnosed the case as one of chronic amœbic dysentery.

A glycerine enema was given and on examination of the resultant stool, large numbers of cysts and of free living E. histolytica were found, the stool itself being well formed. The patient was treated with emetine which caused rapid subsidence of the tumour and improvement of the general condition so much so that on the 5th day the patient decided upon leaving hospital. She was free from any pain and the tumour was just palpable.

What the exact morbid anatomy in these cases is I have no experience or knowledge. Presumably, the tumour mass is the result of extensive infiltration of the submucosa of the bowel and not of a localised peritonitis. The rapid resolution under emetine is a very striking feature.

IV.—Fitzsimons Anti-Snake-Venom Serum by O. G. Wilde, Medical Officer, Tamale.

Case 1.—On 2nd October, 1931, a Veterinary labourer, Musa Busanga, at Pong-Tamale, was bitten on the little toe by a small snake. It was not seen by me. The wound was cut open and treated with Pot. permang and a tube of Fitzsimons' serum was injected by Mr. Orr, Acting Principal Veterinary Officer.

He brought the case to me on the same evening and I first saw him about two hours after the bite. He was feeling a little pain in the toe but was otherwise quite comfortable so he was left alone and a second dose of serum was *not* given.

He had a small rise of temperature the following morning which soon subsided and on the 4th October, everything appeared to be progressing favourably.

On 5th October, he developed severe pain in the toe, calf, thigh and abdomen and had severe bleeding from the gums and from the wound in the toe. A certain amount of blood appeared to be coming also from the lungs but of this I am not quite certain.

Ten c.c. of Fitzsimons' serum was injected at once and the bleeding diminished considerably in the next few hours. It was present afterwards for several days but continued to diminish until it stopped completely and the man had recovered completely by the 19th October.

Case 2.—The second case Abudu Grunshi, a Veterinary labourer at Pong-Tamale, was bitten on 10th October, by a snake, whose description tallies closely with that in the first case and makes it probable that it was of the same species. Dr. Howells, who was in Pong-Tamale on inspection gave first aid and injected 10 c.c. of Fitzsimons' serum and brought the patient to Tamale in his car.

I saw him at 7.30 p.m. and he was then bleeding freely from his gums and from the wound in his toe. 10 c.c. of Fitzsimons' serum was injected and the bleeding diminished rapidly. For a few days his sputum was blood stained, but he rapidly recovered and is now convalescent.

The checking of the hæmorrhage was so marked in both these cases that I am convinced of the efficacy of the serum.

V. Notes on a Case of Sub-acute Rheumatic Fever by Miss C. D. Williams.

(The following report by the Woman Medical Officer, Princess Marie Louise Ho pital, Accra, on a case of rheumatic fever, is included here as being of great. interest owing to the subsequent heart condition.)

History.—Female aged seven from Nsawam, first attended Princess Marie Louise Hospital on 3rd February, 1932. Two months previously patient had an attack of fever attended with much sweating—but no swelling. Patient could not walk because of the pains in the legs : was given medicine bought at a drug store but the pains did not improve. No signs of yaws. Wassermann reaction negative.

Condition of Patient.—Weight 3 stones 10 lbs. T.97.4, P.110 thin and small dark circles under the eyes, pains in joints for two months, flabby and listless. Fever and headache frequently anæmia+ spleen +2. Both wrists swollen and both ankles L.V.R. Throat nil abnormal. No nodules. Swelling of joints has appeared recently. (On another occasion the mother stated that these joints and also the knees we e swollen at the first onset of the fever).

Cardiac condition.—P.110 increased by exercise. Heart enlarged mitral systolic bruit. Pulmonary 2nd ound accentuated.

Progress of case.—Pains and swelling improved on salicylates. After one week the patient was admitted to the hospital. She remained here for two months. During this time the swelling and pain in all the joints cleared up completely. The child ran an irregular temperature up to 100°. The pulse varied between 90 and 110. There was slightly excessive sweating. The heart increased in size, and the murmur increased in strength. A mid diastolic murmur became audible and then a presystolic. A well marked thrill developed—and this was followed by a good deal of precordial pain and a recurrence of pain and swelling of the left ankle

Blood.—Contained no malarial parasites.

Stool.—Trichiurus ova.

Ascaris ova.

The intestinal parasites were treated, and the child's general condition improved slightly towards the end of her stay in hospital. A month later this child was seen by a medical practitioner in Nsawam who reported that she was then " crippled by the heart condition."

D. DUFF,

Director, Medical and Sanitary Service.

1*st April*, 1932.

RETURNS.

Table I.—Medical, Health and Laboratory Service Staff on the 1st April, 1931.

	Authorised Establishment.	Provision in Estimates.	Vacancy.
Director of Medical and Sanitary Service	1	1	—
Deputy Director of Medical Service	1	1	—
Deputy Director of Health Service	1	1	—
Deputy Director of Laboratory Service	1	1	—
Assistant Director of Medical Service	2	2	—
Assistant Director of Sanitary Service	1	1	—
Specialists (two surgical and one medical)	3	3	—
Senior Health Officers	2	2	—
Senior Medical Officers	6	6	—
Senior Pathologist	1	1	—
Pathologists	6	5	—
Entomologist	1	1	—
Assistant Entomologist	1	1	—
Medical Officers	34	34	—
Medical Officers of Health	15	15	1
Alienist Officer	1	1	—
Medical Secretary, Gold Coast Branch, British Empire Leprosy Relief Association	1	1	—
Women Medical Officers	3	3	—
Women Medical Officers (Infant Clinic)	8	8	1
African Medical Officers	5	5	1
Junior African Medical Officers	2	2	1
Secretary to Director of Medical and Sanitary Service	1	1	—
Radiographer	1	1	—
Assistant Radiographer	1	1	—
Dental Surgeon	1	1	—
African Government Dentist	1	—	—
Analytical Chemists	2	2	—
Dispensers' Instructor	1	1	—
Medical Storekeeper	1	1	—
Secretary, Gold Coast Hospital	1	1	—
Senior Superintending Sanitary Inspector	1	1	—
Superintending Sanitary Inspectors	23	23	—
Laboratory Superintendent	1	1	—
Laboratory Assistants	2	2	—
European Nursing Staff.			
Matron	1	1	—
Senior Nursing Sisters	4	4	—
Nursing Sisters	27	27	1
Members of the Subordinate Staff. Medical Branch.			
Chief Dispensers	3	3	—
First Division Dispensers	6	6	—
Second Division Dispensers and Dispensers-in-Training	69	69	1
Laboratory Attendants	3	3	—
Chief Nurses	3	—	—
First Division Nurses	8	8	—
Second Division Nurses and Nurses-in-Training	232	232	26
Midwives-in-Training	6	6	—
Chief Clerk	1	1	—
First Division Clerks	2	2	—
Second Division Clerks	26	26	2
Lodge-Keepers	2	2	—
Telephone Operators	4	4	—
Lunatic Asylum.			
Head Attendant	1	1	—
Assistant Attendant	1	1	—
Mental Nurses	21	21	—
Matron	1	1	—
Gate-keeper	1	1	—
Health Branch.			
Office Assistant and Accountant	1	1	—
First Division Clerks	2	2	—
Second Division Clerks	20	20	—
Sanitary Inspector and Training Officer	1	1	—
Senior Division Sanitary Inspectors	2	2	—
First Division Sanitary Inspectors	6	6	—
Second Division Sanitary Inspectors	100	100	12
Female Sanitary Inspectors	—	2	2
Storekeepers	2	2	—
Disinfector Mechanic	1	1	—

TABLE I.—*contd.*

	Authorised Establishment.	Provision in Estimates.	Vacancy.
Vaccinators	12	12	—
Senior Village Overseer	1	1	—
Village Overseers	18	18	—
Assistant Disinfector Mechanics	4	4	1
Nurse-Midwives	7	7	—
Midwives	6	6	—
Second Division Dispensers and Dispensers-in-Training	7	7	—
Second Division Nurses and Nurses-in-Training ...	14	14	—
Health Visitors	4	4	—
Engineering Fitter	1	1	—
Market Clerk	1	1	—
CONTAGIOUS DISEASES HOSPITAL.			
Caretaker	1	1	—
Attendants	3	3	—
MEDICAL RESEARCH INSTITUTE.			
Laboratory Attendants	8	8	—
Laboratory Learners	4	4	—
Second Division Clerk	1	1	—

TABLE II.

(*c*) FINANCE.

Estimated Expenditure for the year 1931–32.

(*a*) PERSONAL EMOLUMENTS.

Medical.

	£	*s.*	*d.*
Administrative Officers	5,600	0	0
Specialists	4,000	0	0
Senior Medical Officers	6,769	0	0
Medical Officers (European and African)	34,440	0	0
Dental Surgeon	899	0	0
European Nursing Staff	14,121	0	0
African Nursing Staff and Dispensers	32,573	0	0
Clerical Staff	4,088	0	0
Various items, allowances, etc.	20,684	0	0
Estimated Total Personal Emoluments	123,174	0	0
Actual Total Personal Emoluments	117,784	18	8

Health.

	£	*s.*	*d.*
Administrative Officers	2,700	0	0
Senior Health Officers and Medical Officers of Health	15,614	0	0
European Sanitary Inspectors	11,032	0	0
African Sanitary Inspectors	16,007	0	0
Various items, allowances, etc.	20,392	0	0
Estimated Total Personal Emoluments	65,745	0	0
Actual Total Personal Emoluments	60,492	3	10

Laboratory Service.

	£	*s.*	*d.*
European Staff	13,144	0	0
African Staff	1,574	0	0
Estimated Total Personal Emoluments	14,718	0	0
Actual Total Personal Emoluments	12,443	10	8

(*b*) Other Charges.

Medical.

	£	*s.*	*d.*
Passages, transport, etc.	15,473	0	0
Hospital equipment, drugs, medical appliances, surgical instruments, etc.	19,270	0	0
Diets, medical comforts	12,450	0	0
Other items	12,145	0	0
Contributions	—		
Estimated Total	59,338	0	0
Actual Expenditure	48,787	7	6

Health.

	£	*s.*	*d.*
Passages, transport, etc.	10,587	0	0
General Health votes	47,952	0	0
Scavengers and labourers	39,118	0	0
Estimated Total	97,657	0	0
Actual Expenditure	78,591	3	3

Laboratory Service.

	£	*s.*	*d.*
Passages, transport, etc.	2,103	0	0
General Research votes	1,684	0	0
Estimated Total	3,787	0	0
Actual Expenditure	2,045	2	6

	£	*s.*	*d.*
Estimated total expenditure, Medical Department (all branches)	364,419	0	0
Actual total expenditure, Medical Department (all branches) ...	320,144	6	5

Revenue earned by Medical Branch :—

	£	*s.*	*d.*
(*a*) Hospital fees	8,847	15	2
(*b*) Sale of drugs in private practice	352	4	6
(*c*) Re-imbursement by Railway Department and Takoradi Harbour	2,350	0	0
Total	11,549	19	8

Revenue earned by Health Branch :—

	£	*s.*	*d.*
(*a*) Fines for sanitary offences	7,958	0	0
(*b*) Market and slaughter house fees	6,246	15	2
(*c*) Poundage fees	284	15	4
(*d*) Births, deaths and burials	658	17	0
(*e*) Re-imbursement by Railway Department and Takoradi Harbour	3,239	0	0
(*f*) Conservancy fees	870	13	10
(*g*) Fees collected at Infant Clinics	3,850	16	5
Total	23,108	17	9

Table III.

Accurate returns of statistics of population for the year cannot be rendered as the Births and Deaths Registration Districts constitute but a small portion of the Colony and its Dependencies.

Table IV.

(*a*) Meteorological Data for the Year 1931–32.

Months.	Accra.			Cape Coast.			Sekondi.			Kumasi.			Tamale.		
	Rainfall in inches.	Shade maximum.	Relative humidity.	Rainfall in inches.	Shade maximum.	Relative humidity.	Rainfall in inches.	Shade maximum.	Relative humidity	Rainfall in inches.	Shade maximum.	Relative humidity.	Rainfall in inches.	Shade maximum.	Relative humidity.
April	4.41	88.8	86.6	2.06	88.2	80.2	2.40	91.1	67.0	4.55	90.1	84.7	2.80	97.0	64.5
May	5.90	88.3	76.0	6.03	84.9	91.0	12.44	89.6	73.8	9.37	88.7	83.8	4.58	94.5	66.8
June	5.64	85.3	79.8	16.07	81.6	95.1	19.00	85.5	77.2	15.61	86.1	85.9	3.82	92.1	70.1
July	0.32	81.9	80.5	1.91	79.5	89.6	2.18	82.3	79.1	4.37	83.5	88.4	10.67	88.2	77.1
August	0.76	81.1	83.2	1.63	78.6	92.4	2.14	80.8	83.9	3.41	83.2	89.5	4.24	88.5	76.4
September	0.73	83.3	76.8	1.75	79.6	96.2	2.67	83.8	80.2	6.48	84.6	89.0	8.99	88.8	78.2
October	2.84	86.2	74.7	2.78	83.9	87.8	2.82	99.3	60.5	8.57	87.8	87.1	1.25	93.9	66.4
November	3.63	87.5	76.4	8.09	84.9	84.8	7.05	89.9	75.6	1.27	89.2	85.1	0.22	96.8	63.3
December	0.00	89.6	73.8	0.49	85.5	88.1	1.75	89.9	65.3	0.56	89.8	85.7	0.12	96.5	56.2
January	0.00	89.2	62.3	0.00	85.4	77.3	0.00	89.8	81.9	0.30	89.3	71.9	0.01	94.7	33.7
February	0.92	88.6	68.2	0.98	86.7	88.7	2.55	91.4	74.0	5.86	92.4	83.3	0.78	99.6	44.8
March	4.07	87.0	80.3	1.39	86.0	85.0	1.77	91.1	75.3	6.34	88.2	86.2	2.58	99.1	56.1
Totals and mean	29.22	86.4	76.6	43.18	87.3	88.0	56.77	88.7	74.4	66.69	87.7	85.1	40.06	92.5	62.8

(*b*) METEOROLOGICAL OBSERVATIONS, LABORATORY GROUNDS, KORLE BU, ACCRA, 9 A.M. READINGS, 1931–32.

Month.	Rainfall in inches.	Highest maximum temperature recorded.	Lowest maximum temperature recorded.	Daily average mean temperature.	Temperature of the dew point.	
					Highest.	Lowest.
April, 1931 ...	5.27	88	72	82.12	79	72
May ...	6.31	87	75	81.58	77	73
June	4.95	86	73	79.43	77	72
July	0.12	82	74	77.73	75	69
August ...	1.32	81	73	76.60	74	69
September ...	1.45	83	73	78.17	75	70
October ...	3.23	86	74	80.18	76	71
November ...	4.06	86	74	78.38	77	70
December ...	—	86	75	81.05	76	66
January, 1932	—	87	70	79.39	76	41
February ...	1.04	86	74	81.68	79	69
March ...	4.49	86	74	80.66	75	70

Total rainfall 32.24 inches.

Table V.

Return of diseases and deaths (In-patients) and diseases (Out-patients) for the year 1931–1932.

Table V.

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1931–32.

Medical and Health Branches.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
		Admissions.	Deaths.				
I.—*Epidemic, endemic, and infectious diseases.*							
1. Enteric Group—							
(*a*) Typhoid fever ...	1	19	7	20	—	7	4
(*b*) Paratyphoid A. ...	—	3	1	3	—	1	—
(*c*) Paratyphoid B. ...	—	3	—	3	—	—	—
(*d*) Paratyphoid C. ...	—	1	—	1	—	—	—
(*e*) Type not defined ...	1	7	4	8	—	1	2
2. Typhus	—	—	—	—	—	—	—
3. Relapsing fever	2	17	3	19	2	4	1
4. Undulant fever	—	—	—	—	—	—	—
5. Malaria—							
(*a*) Tertian	2	299	1	301	1	1,083	405
(*b*) Quartan	—	19	1	19	—	17	14
(*c*) Aestivo-autumnal	19	984	39	1,003	19	12,740	10,845
(*d*) Cachexia	—	16	2	16	1	113	86
(*e*) Blackwater ...	—	24	8	24	1	6	5
(*f*) Unclassified ...	2	61	4	63	1	1,809	1,485
6. Smallpox	8	1	—	9	—	2	—
Alastrim	—	—	—	—	—	—	—
7. Measles	16	30	—	46	1	424	324
8. Scarlet fever	—	1	—	1	—	2	—
9. Whooping cough ...	—	20	2	20	1	708	783
10. Diphtheria	—	1	—	1	—	3	1
11. Influenza	—	227	1	227	—	892	170
12. Miliary fever	—	—	—	—	—	3	—
13. Mumps	1	14	—	15	1	27	14
14. Cholera	—	—	—	—	—	—	—
15. Epidemic diarrhœa ...	—	—	—	—	—	—	—
16. Dysentery—							
(*a*) Amœbic	6	199	25	205	7	371	209
(*b*) Bacillary	—	69	10	69	2	80	67
(*c*) Undefined or due to other causes ...	—	43	10	43	—	317	247
17. Plague—							
(*a*) Bubonic	—	—	—	—	—	—	—
(*b*) Pneumonic ...	—	—	—	—	—	—	—
(*c*) Septicæmic ...	—	—	—	—	—	—	—
(*d*) Undefined	—	—	—	—	—	—	—
18. Yellow fever	—	16	9	16	1	10	—
19. Spirochaetosis icterohaemorrhagica ...	—	—	—	—	—	30	27
20. Leprosy	82	41	6	123	72	618	501
21. Erysipelas	—	7	—	7	—	10	7
22. Acute poliomyelitis ...	1	8	—	9	2	15	6
23. Encephalitis lethargica ...	—	5	2	5	—	1	1
24. Epidemic cerebro-spinal fever	—	2	1	2	—	2	—
25. Other epidemic diseases—							
(*a*) Rubeolla (German measles)	—	1	—	1	—	2	5
(*b*) Varicella (chicken-pox)	6	332	—	338	13	359	55
(*c*) Kala-azar	—	—	—	—	—	—	—
(*d*) Plebotomus fever ...	—	—	—	—	—	—	—
(*e*) Dengue	—	5	1	5	—	4	1
(*f*) Epidemic dropsy ...	—	—	—	—	—	—	—
(*g*) Yaws	23	264	9	287	24	34,931	27,329
(*h*) Trypanosomiasis ...	11	135	28	146	18	83	23
26. Glanders	—	—	—	—	—	—	—
27. Anthrax	—	—	—	—	—	1	—
28. Rabies	—	—	—	—	—	—	—
29. Tetanus	1	32	20	33	—	18	11
30. Mycosis	—	5	1	5	1	12	3
31. Tuberculosis, pulmonary and laryngeal ...	24	314	138	338	32	544	198

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st Marsh, 1931.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
		Admissions.	Deaths.				
I.—*Epidemic, endemic, and infectious deseases.*							
32. Tuberculosis of the meninges or central nervous system ...	—	1	1	1	—	—	—
33. Tuberculosis of the intestines or peritoneum	—	15	8	15	—	6	3
34. Tuberculosis of the vertebral column ...	3	16	1	19	3	25	11
35. Tuberculosis of bones and joints	6	19	1	25	2	29	16
36. Tuberculosis of other organs—							
(*a*) Skin or subcutaneous tissue (lupus) ...	—	—	—	—	—	—	—
(*b*) Bones	—	5	1	5	1	5	7
(*c*) Lymphatic system	—	35	6	35	2	22	18
(*d*) Genito-urinary ...	—	1	—	1	—	—	—
(*e*) Other organs ...	—	2	2	2	—	1	2
37. Tuberculosis disseminated—							
(*a*) Acute	—	2	1	2	—	3	1
(*b*) Chronic	—	5	2	5	1	1	—
38. Syphilis—							
(*a*) Primary	2	14	—	16	—	123	21
(*b*) Secondary	—	19	—	19	3	105	56
(*c*) Tertiary	11	60	13	71	7	96	62
(*d*) Hereditary ...	1	21	4	22	2	43	31
(*e*) Period not indicated	—	11	—	11	1	17	2
39. Soft chancre	—	127	—	127	8	185	6
40. A.—Gonorrhœa and its complications ...	12	280	2	292	23	2,261	326
B.—Gonorrhœal ophthalmia ...	1	33	—	34	1	105	81
C.—Gonorrhœal arthritis	3	66	1	69	2	213	34
D.—Granuloma venereum	—	6	—	6	—	4	—
41. Septicæmia	—	40	25	40	3	11	3
42. Other infectious diseases— Trypanosomiasis ... *See* Item 25 (*h*)							
II.—*General diseases not mentioned above.*							
43. Cancer or other malignant tumours of the buccal cavity ...	—	4	2	4	1	3	—
44. Cancer or other malignant tumours of the stomach or liver ...	—	4	2	4	—	8	1
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum ...	1	3	2	4	1	3	2
46. Cancer or other malignant tumours of the female genital organs	—	3	1	3	—	—	5
47. Cancer or other malignant tumours of the breast	1	2	2	3	1	—	5

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
II.—*General diseases not mentioned above (contd.)*							
48. Cancer or other malignant tumours of the skin	—	6	1	6	—	10	1
49. Cancer or other malignant tumours of organs not specified	3	20	3	23	1	10	5
50. Tumours non-malignant	4	103	3	107	3	233	123
51. Acute rheumatism ...	—	—	—	—	—	—	1
52. Chronic rheumatism ...	3	134	26	137	8	5,089	2,411
53. Scurvy (including Barlows disease)	—	—	—	—	—	5	—
54. Pellagra	—	—	—	—	—	—	—
55. Beri-beri	—	15	7	15	—	15	1
55*a* Avitaminosis	—	7	4	7	—	13	20
56. Rickets	—	1	1	1	—	15	8
57. Diabetes (not including insipidus)	—	12	3	12	—	12	4
58. Anæmia—							
(*a*) Pernicious		1	—	1	—	—	3
(*b*) Other anæmias and chlorosis	3	28	4	31	—	438	276
59. Diseases of the pituitary body	—	—	—	—	—	1	—
60. Diseases of the thyroid gland—							
(*a*) Exophthalmic goitre	—	—	—	—	—	4	5
(*b*) Other diseases of the thyroid gland, myxœdema ...	—	6	—	6	2	5	11
61. Diseases of the parathyroid glands ...	—	—	—	—	—	—	—
62. Diseases of the thymus ...	—	—	—	—	—	—	—
63. Diseases of the suprarenal glands ...	—	—	—	—	—	—	—
64. Diseases of the spleen ...	1	1	—	2	—	76	49
65. Leukæmia—							
(*a*) Leukæmia	1	2	1	3	—	1	—
(*b*) Hodgkin's disease	—	1	—	1	—	4	1
66. Alcoholism	—	8	—	8	1	3	—
67. Chronic poisoning by mineral substances (lead, mercury, etc.)	—	3	—	3	—	2	1
68. Chronic poisoning by organic substances (morphia, cocaine etc.)	—	1	—	1	—	1	1
69. Other general diseases—		—	—	—	—	3	—
Auto-intoxication ...	—	2	1	2	—	7	7
Purpura hæmorrhagica	—	1	—	1	—	—	—
Hæmophilia	—	—	—		—	1	—
Diabetes insipidus ...	—	3	—	3	—	—	—
69*a* Pyrexia of unknown origin	4	13	—	17	—	147	48

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st Marsh, 1931.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
		Admissions.	Deaths.				
III.—*Affections of the nervous system and organs of the senses*							
70. Encephalitis (not including encephalitis lethargica)	1	8	4	9	—	4	—
71. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis)	1	32	16	33	—	16	8
72. Locomotor ataxia ...	—	—	—	—	—	2	—
73. Other affections of the spinal cord	—	7	—	7	1	9	3
74. Apoplexy—							
(*a*) Hæmorrhage ...	—	22	12	22	—	13	4
(*b*) Embolism	—	3	3	3	—	3	1
(*c*) Thrombosis ...	—	4	—	4	—	2	—
75. Paralysis—							
(*a*) Hemiplegia ...	4	43	6	47	5	67	12
(*b*) Other paralyses ...	2	45	5	47	9	75	28
76. General paralysis of the insane	4	4	1	8	—	4	1
77. Other forms of mental alienation	1	39	1	40	1	49	13
78. Epilepsy	8	30	2	38	5	79	33
79. Eclampsia, convulsions (non-puerperal) five years or over ...	—	3	1	3	—	14	7
80. Infantile convulsions ...	—	14	5	14	—	24	22
81. Chorea	1	—	—	1	—	3	—
82. A.—Hysteria	—	15	1	15	1	49	49
B.—Neuritis	5	22	2	27	2	241	87
C.—Neurasthenia ...	1	22	—	23	2	84	40
83. Cerebral softening ...	—	—	—	—	—	—	—
84. Other affections of the nervous system, such as paralysis agitans	—	20	1	20	2	97	91
85. Affections of the organs of vision—							
(*a*) Diseases of the eye	1	154	1	155	11	502	363
(*b*) Conjunctivitis ...	3	238	1	241	9	2,950	2,034
(*c*) Trachoma	—	41	1	41	5	66	34
(*d*) Tumours of the eye	—	1	—	1	—	56	21
(*e*) Other affections of the eye	5	146	1	151	11	995	353
86. Affection of the ear or mastoid sinus ...	1	68	—	69	1	1,897	847
IV.—*Affections of the circulatory system.*							
87. Pericarditis	—	12	7	12	—	14	7
88. Acute endocarditis or myocarditis	1	13	5	14	—	12	12
89. Angina pectoris	—	—	—	—	—	14	1
90. Other diseases of the heart		6	1	6	—	12	11
(*a*) Valvular	1	4	—	5	—	6	3
Mitral	—	24	5	24	—	83	36
Aortic	—	6	1	6	—	19	4
Tricuspid	—	—	—	—	—	1	—
Pulmonary ...	—	2	1	2	—	1	—
(*b*) Myocarditis ...	2	34	10	36	3	88	41
91. Diseases of the arteries—							
(*a*) Aneurism	—	8	5	8	—	7	5
(*b*) Arterio-sclerosis ...	—	9	1	9	—	31	12
(*c*) Other diseases ...	—	—	—	—	—	18	4
92. Embolism or thrombosis (non-cerebral) ...	1	1	1	2	—	—	—
93. Diseases of the veins—							
Hæmorrhoids	—	72	1	72	2	263	79
Varicose veins	—	2	—	2	—	15	5
Phlebitis	—	7	—	7	—	12	4

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
		Admissions.	Deaths.				
IV.—*Affections of the circulatory system (contd.)*							
94. Diseases of the lymphatic system—							
Lymphangitis ...	1	25	1	26	—	103	69
Lymphadenitis, bubo (non-specific) ...	5	157	—	162	5	683	235
95. Hæmorrhage of undetermined cause ...	—	4	—	4	—	6	2
96. Other affections of the circulatory system ...	1	10	1	11	—	22	6
V.—*Affections of the respiratory system.*							
97. Diseases of the nasal passages—							
Adenoids	—	2	—	2	—	21	13
Polypus	—	6	—	6	—	9	6
Rhinitis	—	5	—	5	—	84	54
Coryza	—	47	—	47	1	1,113	402
Ill-defined	—	4	—	4	—	9	15
98. Affections of the larynx—							
Laryngitis	—	15	2	15	—	177	76
99. Bronchitis—							
(*a*) Acute	5	275	12	280	10	4,291	2,274
(*b*) Chronic	1	39	2	40	2	2,493	1,733
100. Broncho-pneumonia ...	2	184	78	186	6	694	286
101. Pneumonia—							
(*a*) Lobar	10	312	91	322	12	185	68
(*b*) Unclassified ...	1	38	12	39	—	91	33
102. Pleurisy, empyema ...	11	95	12	106	4	237	79
103. Congestion of the lungs ...	—	8	2	8	—	14	7
104. Gangrene of the lungs ...	—	1	1	1	—	4	—
105. Asthma	1	43	—	44	2	137	58
106. Pulmonary emphysema ...	—	2	—	2	—	8	3
107. Other affections of the lungs	2	14	6	16	—	814	590
Pulmonary spirochaetosis	—	—	—	—	—	16	9
VI.—*Diseases of the digestive system.*							
108. A.—Diseases of teeth or gums—							
Caries, pyorrhœa, etc.	1	87	—	88	2	2,347	1,423
B.—Other affections of the mouth	—	3	1	3	—	66	42
Stomatitis	3	51	2	54	—	776	595
Glossitis, etc.	—	18	—	18	—	243	139
109. Affections of the pharynx or tonsils—							
Tonsilitis	1	76	1	77	—	408	236
Pharyngitis	2	15	—	17	1	276	110
110. Affections of the Œsophagus	—	2	—	2	—	6	3
111. A.—Ulcer of the stomach	2	7	—	9	—	7	2
B.—Ulcer of the duodenum	—	10	—	10	—	3	—
112. Other affections of the stomach	—	3	—	3	—	4	1
Gastritis	—	66	10	66	—	423	143
Dyspepsia, etc. ...	—	47	—	47	2	1,332	671
113. Diarrhœa and enteritis—							
Under two years ...	1	62	13	63	1	491	373

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st Marsh, 1931.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
VI.—Diseases of the digestive system contd.							
114. Diarrhœa and enteritis—							
Two years and over ...	4	267	17	271	12	2,073	1,187
Colitis	—	42	3	42	—	129	84
Ulceration	—	2	—	2	—	45	35
114*a* Sprue	—	—	—	—	—	—	—
115. Ankylostomiasis	9	134	11	143	3	36	25
116. Diseases due to intestinal parasites—							
(*a*) Cestoda (tænia) ...	—	57	5	57	3	756	222
(*b*) Tremotoda (flukes)	—	2	1	2	—	1	—
(*c*) Nematoda (other than ankylostoma)—	—	2	—	2	—	—	—
Ascaris	3	166	8	169	5	1,205	996
Trichocephalus dispar	—	—	—	—	—	—	—
Trichina	—	2	—	2	—	1	1
Dracunculus ...	20	319	1	339	26	907	251
Strongylus	—	3	—	3	—	15	19
Oxyuris	—	1	—	1	—	59	68
(*d*) Coccidia	—	—	—	—	—	—	—
(*e*) Other parasites ...	—	27	10	27	—	47	22
(*f*) Unclassified ...	—	—	—	—	—	8	1
117. Appendicitis	—	31	6	31	3	13	9
118. Hernia	8	202	23	210	15	340	12
119. A.—Affections of the anus, fistula, etc. ...	2	81	3	83	10	177	114
B.—Other affections of the intestines— ...	—	18	7	18	—	23	11
Enteroptosis	—	1	—	1	—	10	5
Constipation	—	207	—	207	—	8,649	2,869
120. Acute yellow atrophy of the liver	—	—	—	—	—	—	—
121. Hydatid of the liver ...	—	—	—	—	—	1	—
122. Cirrhosis of the liver—					—		
(*a*) Alcoholic	—	3	1	3	—	—	—
(*b*) Other forms ...	1	27	12	28	1	15	1
123. Biliary calculus	—	4	—	4	—	—	1
124. Other affections of the liver—	—	1	—	1	—	11	2
Abscess	1	21	6	22	—	24	12
Hepatitis	5	65	4	70	2	106	29
Cholecystitis	—	2	—	2	—	2	2
Jaundice	3	45	5	48	3	117	56
125. Discases of the pancreas		—	—	—	—	—	—
126. Peritonitis (of unknown cause)	—	19	10	19	—	23	7
127. Other affections of the digestive system ...	—	32	10	32	—	65	18
VII.—*Disease of the genito-urinary system (non-venereal).*							
128. Acute nephritis	4	86	35	90	4	112	73
129. Chronic nephritis ...	6	79	21	85	2	69	38
130. A.—Chyluria	—	—	—	—	—	—	—
B.—Schistosomiasis ...	9	92	14	101	—	335	94
131. Other affections of the kidneys—	2	9	1	11	1	—	—
Pyelitis, etc.	2	36	12	38	3	21	21
VII.—*Diseases of the genito-urinary system (non-venereal)*—							
132. Urinary calculus	—	1	—	1	—	3	2
133. Diseases of the bladder—	—	1	—	1		2	—
Cystitis	1	75	3	76	6	240	131
134. Diseases of the Urethra—	—	1	—	1	—	—	—
(*a*) Stricture	10	150	4	160	6	272	3
(*b*) Other	5	98	2	103	7	153	14

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
VII.—*Diseases of the genitory urinary system (non-venereal) (contd.)*							
135. Diseases of the prostate—							
Hypertrophy	—	2	—	2	—	3	—
Prostatitis	2	17	—	19	2	49	2
136. Diseases (non-venereal) of the genital organs of man—	—	33	—	33	1	33	—
Epididymitis	—	33	—	33	2	102	—
Orchitis	1	68	—	69	1	233	—
Hydrocele	1	34	1	35	1	173	—
Ulcer of penis	5	64	—	69	3	138	—
Phimosis and paraphimosis	2	150	—	152	6	227	—
137. Cysts or other non-malignant tumours of the ovaries	1	33	2	34	—	—	18
138. Salpingitis	2	43	1	45	2	—	32
Abscess of the pelvis ...	2	14	2	16	—	—	41
139. Uterine tumours (non-malignant)	2	33	1	35	4	—	63
140. Uterine hæmorrhage (non-puerperal)	—	4	—	4	—	—	40
141. A.—Metritis	—	30	1	30	4	—	549
B.—Other affections of the female genital organs—	3	137	5	140	5	—	191
Displacements of uterus	2	6	—	8	2	—	33
141. B.—Other affections of the female genital organs :—							
Amenorrhœa ...	—	5	—	5	—	—	222
Dysmenorrhœa ...	—	16	—	16	—	—	363
Leucorrhœa ...	—	6	—	6	—	—	134
142. Diseases of the breast (non-puerperal)— ...	—	3	—	3	—	—	—
Mastitis	—	14	—	14	—	3	126
Abscess of breast ...	—	11	—	11	—	2	20
VIII.—*Puerperal state.*							
143. Normal labour	10	448	—	458	9	—	483
143*a* Maternal Welfare (antenatal)	9	263	—	272	8	—	10,310
B.—Accidents of pregnancy—							
(*a*) Abortion	—	119	2	119	3	—	112
(*b*) Ectopic gestation ...	—	3	—	3	—	—	24
(*c*) Other accidents of pregnancy ...	9	145	21	154	5	—	130
144. Puerperal hæmorrhage ...	—	15	1	15	1	—	8
145. Other accidents of parturition	4	151	10	155	7	—	18
146. Puerperal septicæmia ...	—	22	11	22	1	—	5
147. Phlegmasia dolens ...	—	1	—	1	—	—	—
148. Puerperal eclampsia ...	—	15	3	15	—	—	4
149 Sequelæ of labour ...	—	24	8	24	—	—	11
149*a* Post-natal examination—(mothers and infants)	2	91	—	93	1	546	3,297
150. Puerperal affections of the breast	1	10	—	11	—	—	19

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st march, 1931.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
		Admissions.	Deaths.				
IX.—*Affections of the skin and cellular tissues.*							
151. Gangrene	2	24	7	26	2	12	8
152. Boil—	3	56	—	59	4	1,263	872
Carbuncle	—	86	—	86	1	311	84
153. Abscess—	12	305	10	317	14	1,117	201
Whitlow	2	82	—	84	—	540	219
Cellulitis	24	462	13	486	14	1,242	356
154. A.—Tinea	—	14	—	14	1	1,532	949
B.—Scabies	—	42	—	42	6	1,803	971
155. Other diseases of the skin—	3	35	3	38	2	1,792	1,406
Erythema	—	6	—	6	—	91	29
Urticaria	—	10	—	10	—	272	124
Eczema	4	43	—	47	—	915	703
Herpes	2	14	—	16	—	121	43
Psoriasis	—	1	—	1	—	36	12
Elephantiasis	2	32	1	34	—	88	19
Myiasis	—	3	—	3	—	3	1
Chigers	—	3	—	3	—	14	1
Cutaneous Leishmaniasis	—	—	—	—	—	—	—
155*a* Ulcers	138	988	10	1,126	99	7,569	3,920
X.—*Diseases of bones and organs of locomotion (other than tuberculous).*							
156. Diseases of bones— ...	—	—	—	—	—	3	—
Osteitis	9	87	7	96	7	353	248
157. Diseases of joints—							
Arthritis	13	172	—	185	10	1,167	395
Synovitis	7	104	—	111	7	307	108
158. Other diseases of bones or organs of locomotion	8	123	3	131	5	1,100	286
XI.—*Malformations.*							
159. Malformations— ...	—	—	—	—	—	19	10
Hydrocephalus ...	—	11	1	11	—	4	3
Hypospadias	—	4	2	4	—	5	1
Spina bifida, etc. ...	—	8	—	8	—	6	1
XII.—*Diseases of infancy.*							
160. Congenital debility ...	—	37	20	37	—	124	117
161. Premature birth ...	1	7	3	8	—	24	19
162. Other affections of infancy	1	39	10	40	3	1,117	1,137
163. Infant neglect (infants of three months or over)	—	—	—	—	—	84	91
163*a* New born infants ...	2	524	32	526	12	—	
XIII.—*Affections of old age.*							
164. Senility—	—	6	1	6	1	15	9
Senile dementia ...	1	3	3	4	1	4	2
XIV.—*Affections produced by external causes.*							
165. Suicide by poisoning ...	—	5	4	5	—	6	—
166. Corrosive poisoning (intentional)	—	5	1	5	—	2	—
167. Suicide by gas poisoning	—	—	—	—	—	—	—
168. Suicide by hanging or strangulation ...	—	—	—	—	—	1	—
169. Suicide by drowning ...	—	—	—	—	—	1	—
170. Suicide by firearms ...	—	—	—	—	—	—	—
171. Suicide by cutting or stabbing instruments	—	2	2	2	—	5	—

TABLE V.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1931–32.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
XIV.—Affections produced by External Causes (contd.)							
172. Suicide by jumping from a height	—	—	—	—	—	—	—
173. Suicide by crushing ...	—	—	—	—	—	—	—
174. Other suicides	—	—	—	—	—	1	—
175. Food poisoning— ...	—	8	—	8	—	7	1
Botulism	—	—	—	—	—	—	—
176. Attacks of poisonous animals—							
Snake bite	2	37	—	39	—	43	6
Insect bite	—	25	1	25	2	74	15
177. Other accidental poisonings	—	10	3	10	—	11	9
178. Burns (by fire)	14	67	13	81	5	184	102
179 Burns (other than by fire)	2	34	1	36	4	122	93
180. Suffocation (accidental)	—	—	—	—	—	2	1
181. Poisoning by gas (accidental)	—	1	—	1	—	2	—
182. Drowning (accidental) ...	—	1	—	1	—	—	—
183. Wounds (by firearms, war excepted)	17	112	10	129	16	60	5
184. Wounds (by cutting or stabbing instruments)	22	511	16	533	37	2,123	396
185. Wounds (by fall)	18	260	7	278	6	1,849	261
186. Wounds (in mines or quarries)	3	4	—	7	1	699	6
187. Wounds (by machinery)	—	11	—	11	1	227	28
188. Wounds (crushing, e.g. railway accidents, etc)	2	351	13	353	17	376	53
189. Injuries inflicted by animals—bites, kicks, etc.	—	60	1	60	2	196	38
190. Wounds inflicted on active service	—	—	—	—	—	—	—
191. Executions of civilians by belligerents	—	—	—	—	—	—	—
192. A.—Over fatigue ...	—	10	2	10	—	—	—
B.—Hunger or thirst ...	—	12	4	12	3	19	1
193. Exposure to cold, frost bite— etc	—	1	—	1		1	1 —
194. Exposure to heat—							
Heatstroke	—	3		3	—	1	—
Sunstroke	—	—	—	—	—	28	6
195. Lightning stroke	—	—	—	—	—	1	—
196. Electric shock	—	—	—	—	—	—	—
197. Murder by firearms ...	—	—	—	—	—	—	—
198. Murder by cutting or stabbing instruments	—	2	2	2	—	2	1
199. Murder by other means ...	—	1	1	1	—	—	1
200. Infanticide (murder of an infant under one year)	—	—	—	—	—	1	—
201. A.—Dislocation	—	47	1	47	—	101	13
B.—Sprain	3	77	—	80	2	595	57
C.—Fracture	52	303	25	355	33	214	49
202. Other external injuries ...	19	196	8	215	5	2,115	402
203. Deaths by violence of unknown cause ...	—	—	—	—	—	18	5

Table V.—*continued.*

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patient) for the Year 1931–32.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st March, 1931.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1932.	Male.	Female.
XV.—*Ill-defined diseases.*							
204. Sudden death (cause unknown)	—	—	—	—	—	—	1
205. A.—Diseases not already specified or ill-defined—	34	10	2	14	—	44	14
Ascites	2	21	7	23	4	72	14
Œdema	7	25	—	32	1	86	45
Asthenia	5	115	36	120	2	1,416	917
Shock	—	7	1	7	—	9	1
Hyperpyrexia ...	—	15	—	15	1	20	10
Other diseases ...	—	—	—	—	—	107	61
B.—Malingering	—	22	—	22	—	106	3
C.—Observation cases ...	—	81	1	81	1	123	92
XVI.—*Diseases, the total of which have not caused ten deaths.*	2	76	4	78	28	227	184
Total	950	17,634	1,409	18,584	935	142,028	98,455

Surgical operations : ...
Major ... ... 1,130 Minor 2,484

Table VI.

Analysis of the totals given in Table V (shewing the figures for the Medical Branch and the Health Branch separately, also shewing separately the Health Branch figures for Infant Clinics and Contagious Diseases Hospitals).

Diseases.	In-Patients.				Out-Patients.	
	Remaining on 31st March, 1931.	Admissions.	Deaths.	Total cases treated.	Remaining on 31st March, 1932.	Male.	Female.
Medical Branch ...	816	16,023	1,185	16,839	811	113,072	68,294
Health Branch — Infant Clinics ...	38	1,256	184	1,294	39	28,926	30,134
Health Branch — Contagious Diseases Hospitals ...	96	355	40	451	85	30	27
	950	17,634	1,409	18,584	935	142,028	98,455

APPENDICES.

APPENDIX A.

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH MANDATED TOGO, MEDICAL BRANCH.

Colony.	Hospital.		European.				African.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	Remarks.
	European.	African.	Total Beds at present.		Number of Beds possible.		Total Beds at present.		Number of Beds possible.				
			M.	F	M.	F.	M.	F.	M.	F.			
Accra	1	1	17	3	17	3	166+6 cots	43+12 cots	166+6 cots	43+12 cots	2	5 (M.Os.)	
Accra Cantonments	—	1	—	—	—	—	6	—	6	—	1	1 (M.O.)	
Accra Maternity	—	1	—	—	—	—	—	29+19 cots	—	29+15 cots	—	1 (W.M.O.)	
Accra Princess Marie Louise ...	—	1	—	—	—	—	—	2+20 cots	—	2+20 cots	1	1 (W.M.O.)	A children's Hospital.
Accra Christiansborg	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Infant Welfare Clinic.
Sekondi	—	1	—	—	—	—	46+2 cots	9+2 cots	46+2 cots	9+2 cots	1	3 (M.Os.)	
Sekondi	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Infant Welfare Clinic.
Takoradi	1	—	16	4	16	4	—	—	—	—	1	1 (M.O.)	
Chama	—	—	—	—	—	—	—	—	—	—	—	1 (W.M.O.)	Infant Welfare Clinic, visited by W.M.O.
Cape Coast	1	1	3	—	4	2	24	18	24	22	1	1 (M.O.)	
Cape Coast	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Infant Welfare Clinic.
Saltpond	—	1	—	—	—	—	8	4	8	4	1	1 (M.O.)	
Winneba	1	1	7	1	7	1	28	22+6	32	28+6	1	1 (M.O.)	
Ada	—	1	—	—	—	—	4	4	8	4	1	1 (M.O.)	
Keta	—	1	—	—	—	—	13	4	13	4	1	1 (M.O.)	
Kibi	—	1	—	—	—	—	16	4	16	4	1	(M.O.)	
Mpraeso	—	1	—	—	—	—	8	6	8	6	1	1 (M.O.)	
Dunkwa	—	1	—	—	—	—	15	6	17	8	1	1 (M.O.)	
Tarkwa	—	1	—	—	—	—	11	—	11	—	—	1 (M.O.)	
Axim	1	1	4	2	4	2	12	4	12	4	1	1 (M.O.)	
Wiawso	—	1	—	—	—	—	7	1	11	4	1	1 (M.O.)	Visited occasionally by M.O.
Akuse	—	1	—	—	—	—	12	6	12	8	1	1 (M.O.)	
Koforidua	—	1	—	—	—	—	13	6	13	6	1	1 (M.O.)	
Koforidua	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Infant Welfare Clinic.
Elmina	—	1	—	—	—	—	—	—	—	—	1	1 (M.O.)	Visiting from Cape Coast.
Oda	—	1	—	—	—	—	12	4	12	4	1	1 (M.O.)	
Nsawam	—	1	—	—	—	—	10	4	10	4	1	1 (M O.)	
Total	5	21	47	10	48	12	411+8 cots	176+59 cots	425+8 cots	193+55 cots	25	33	

APPENDIX A—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH MANDATED TOGO, MEDICAL BRANCH.

Ashanti.	Hospital.		European.				African.					Medical staff (Medical officers and women Medical officers).	Remarks.
			Total Beds at present.		Number of Beds possible.		Total Beds at present.		Number of Beds possible.		Dispensaries.		
	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Kumasi	1	1	10	1	10	1	105	33+2 cots	105	33+2 cots	1	3 (M.O.s.)	
Kumasi	—	1	—	—	—	—	—	20 cots	—	20 cots	1	1 (W.M.O.)	Infant Welfare Centre.
Bekwai	—	1	—	—	—	—	6	4	6	4	1	1 (M.O.)	
Sunyani	—	1	—	—	—	—	10	4	12	4	1	1 (M.O)	
Kintampo	—	1	—	—	—	—	16	14	16	14	1	1 (M.O)	
Total	1	5	10	1	10	1	137	55+22 cots	139	55+22 cots	5	7	

Northern Territiories.	Hospital.		European.				African.						
	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Tamale	1	1	4	2	6	2	41+3 cots	4	52+8 cots	4	1	2 (M.O.s.)	
Wa	—	1	—	—	—	—	11	5	12	5	1	1 (M.O.)	
Lawra	—	1	—	—	—	—	11	4	12	4	1	1 (M.O.)	
Zuarungu	—	1	—	—	—	—	8	2	9	3	1	1 (M O.)	Hospital being transferred to Navrongo.
Salaga	—	1	—	—	—	—	8	2	8	2	1	1 (M O.)	
No. 1 Travelling Dispensary ...	—	—	—	—	—	—	—	—	—	—	1	1 (M.O.)	
No. 2 Travelling Dispensary ...	—	—	—	—	—	—	—	—	—	—	1	—	No. 2 Travelling Dispensary not in us owing to shortage of M O.s.
No. 3 Travelling Dispensary ...	—	—	—	—	—	—	—	—	—	—	1	1 (M.O.)	
Total	1	5	4	2	6	2	79+3 cots	17	93+8 cots	18	8	8	

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH MANDATED TOGO, MEDICAL BRANCH.

Colony.	Hospital.		European.				African.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	Remarks.
	European.	African.	Total Beds at present.		Number of Beds possible.		Total Beds at present.		Number of Beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Ho	—	1	—	—	—	—	14	5	14	5	1	1 (M.O.)	
Kete Krachi	—	—	—	—	—	—	—	—	—	—	1	1 (M.O.)	Visited occasionally by M.O.
Yendi	—	1	—	—	—	—	9	—	10	—	1	1 (M.O.)	
Total	—	2	—	—	—	—	23	5	24	5	3	3	
Grand total ...	7	33	61	13	64	15	650+11 cots	253+81 cots	681+16 cots	271+77 cots	41	51	

CONTAGIOUS DISEASES HOSPITAL—HEALTH BRANCH.

	Hospital.		European.				African.						
	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Labadi	1	1	—	—	4	—	31	21	70	70	—	1 (M.O.H.)	Visiting.
Cape Coast	—	1	—	—	—	—	5	4	13	13	—	1 (M.O.H.)	Visiting.
Sekondi	—	1	—	—	—	—	2	—	26	24	—	1 (M.O.H.)	Visiting.
Tarkwa	—	1	—	—	—	—	—	—	5	1	—	1 (M.O.H.)	Visiting.
Winneba	—	1	—	—	—	—	—	—	2	2	—	1 (M.O.H.)	Visiting.
Ada	—	1	—	—	—	—	—	—	4	4	—	1 (M.O.H.)	Visiting.
Saltpond	—	1	—	—	—	—	2	—	4	—	—	1 (M.O.H.)	Visiting.
Kumasi	—	1	—	—	—	—	18	6	18	6	—	1 (M.O.H.)	Visiting.
Keta	—	1	—	—	—	—	2	2	4	2	—	1 (M.O.H.)	Visiting.
Total	1	9	—	—	4	—	60	33	146	122	—	9	

*The number of beds possible is a variable figure. It can in case of outbreak be largely increased.

APPENDIX B.

BRIEF REPORT ON THE LEPER SETTLEMENT, HO, DURING 1931–1932.

Previous reports have dealt fully with the foundation and routine work of the settlement.

The following notes show the present position :—

Staff.—The Medical Officer, Ho.
African Superintendent.
Head Dresser
Three Assistant Dressers } Lepers trained in the Settlement.

Buildings.—No new erections.

Work done.—Total cases treated during the year = 663.

In early and late cases definite improvement has been noted but remissions are common.

Inmates are now chiefly from the Trans-Volta Area.

Employment (Adults).—Light work, farming, weaving, carpentry, shoe-making, basket-making, wood-carving and pottery.

Schools (Children).—Education is carried on in the buildings erected by the Ewe Presbyterian and Roman Catholic Missions. Both adults and children are thus kept steadily employed.

Sanitation.—Three scavengers. Disposal of rubbish by incineration, of excreta by fly-proof pits. Three field incinerators were built during the year.

Water Supply.—Scanty and of indifferent quality. This at times causes hardship. Scarcity of funds has prevented the extension of the Ho Water Supply pipe-line.

SUMMARY OF STATISTICS.

Treated during the year	663
Remaining on 31–3–31	515
On maintenance allowance	440
Admitted during the year	48
Discharged, left, or on parole	222
Died	10
Remaining on 31–3–32	313

E. S. E. MACK,
Medical Officer.

1*st April*, 1932.

Note.—The sharp drop in numbers during the year is due to several causes Amongst these are :—

(*a*) The reduction in the maintenance rate from 6d. per day each (April, 1930) to 4½d. It will have to be reduced later to 3d. This is unfortunately on the low side. It is hoped that prices will soon fall.

(*b*) Fashions in treatment. At the moment there is a strong demand at the Settlement for Moogrol. Because Moogrol has been preferred at Accra. It is considered that Alepol (given at Ho) is inferior, and a certain amount of dissatisfaction exists.

(*c*) The establishment of a Leper Settlement at Akata (French Togoland) has attracted many French subjects back to French Togoland. It is said that inmates are given two francs (about 6d.) per day each.

(*d*) The present area of land set aside for farming is in need of extension.

(*e*) If patients wilfully neglect to come forward for care and treatment, part of their maintenance-money is stopped. This is unpopular but there seems to be no alternative.

(*f*) The inability, owing to the cuts in the Transport Vote of the Medical Officer to travel the district as formerly, and to induce early cases to enter the Settlement and discharged cases showing signs of relapse to return.

(*g*) The endeavour which has been made to limit the Settlement to sufferers from the Trans-Volta Area where Leprosy is most prevalent.

The above reasons practically resolve themselves into one, viz., financial stringency.

APPENDIX C.

Note on 100 Cases of Tuberculosis Treated at the Gold Coast Hospital, Accra, 1931–32.

By Stanley Batchelor, Medical Officer.

For the purpose of this review 100 consecutive cases of Tuberculosis were treated in the Gold Coast Hospital from April, 1931 to March, 1932. In all but two the diagnosis was regarded as clinically certain. In two the diagnosis was suspected but not clinched bacteriologically or otherwise. In 70 per cent of the cases the diagnosis was finally confirmed in the Post-mortem room, or by bacteriological or pathological finding. The organs were affected in the following numbers, Lungs and Pleurae 78, Glands 8, Joints 7, Peritoneum 4, Bones 3.

Lungs and Pleurae.—These organs supplied by far the greatest number of cases. In two cases, however, included in this series, the diagnosis was not finally confirmed clinically or otherwise. In 62 cases Tubercule Bacilli were found in the sputum, usually swarming and in the majority of cases at the first examination. In some cases the sputum was not examined. In 58 cases both lungs were affected, in 12 the left lung only, in seven the right lung, in one the Hilum. Clinical examination was frequently helped by X-Rays.

Treatment was of the usual kind, rest, nourishing diet, cod liver oil, symptomatic remedies for cough, sleeplessness, etc. In a few cases preparations of gold were used. Induction of artificial pneumothorax was occasionally employed. Thirty cases died, 32 were not improved, 16 cases were improved, three of these greatly.

Glands.—All the eight cases were treated surgically and in all the diagnosis was confirmed by examination of removed tissue. In seven cases the cervical glands were involved. In one the femoral glands. Three cases were greatly improved, five improved. In no case could complete cure be said to have taken place.

Bones.—In all the three cases the spine was involved ; two lumbar ; one dorsal. One case died ; two cases were not improved. Treatment was by immobilisation, usually in a Phelps Box.

Joints.—In six of the seven cases the hip joints were involved ; in one the elbow. One case died, two cases were not improved, four cases were improved. Treatment for involvement of the hip was by immobilisation in a Thomas' hip splint.

Peritoneum.—Of the four cases two died ; one was improved ; one greatly improved.

Results.

The results of treatment are admittedly unsatisfactory. Thirty-four cases died, 36 showed no improvement, 25 were improved, six greatly improved. In the latter are included the two cases in which diagnosis was uncertain. Not one case could be said to be cured. These figures confirm what is so widely held, viz., the marked lack of resistance of the African to the virus of Tuberculosis.

APPENDIX D.

Report on the Maternity Hospital, Accra.

By Miss B. A. S. Russell, Woman Medical Officer-in-Charge.

The Staff.—The staff consisted of one Woman Medical Officer, two Nursing Sisters, Seven Midwives-in-Training, six Nurses-in-Training, one second Division Clerk and three unpaid Nurses-in-Training.

Patients.—There was a considerable increase in the work done both in the In-patient and Out-patient Departments.

	1930–31.	1931–32.
Attendances at the antenatal and postnatal clinics	9,968	12,722
In-patient Admissions	678 ...	972
Deliveries	452 ...	553

Research. 1. *Syphilis and Yaws.*—In conjunction with the Medical Research Institute investigations into the causes of Stillbirths and Deaths within the first week of life were pursued.

Sufficient work has not yet been done to lead to any definite conclusions. The full report appears as an appendix to the Report of the Medical Research Institute.

Wassermann Reaction.—Wassermann tests were carried out on many In-patients.

Total number examined	444
Number with double plus reaction	20%
Number with single plus reaction	16.2%

The positive Wassermann reaction rate for In-patients was therefore 36.2 per cent which is slightly in excess of that for last year.

2. *Malaria.*—Routine examinations of maternal blood films and placental smears from labour cases were made.

Total number of cases examined	570
Both showing malaria parasites	15.6%
Both negative	77.4%
Positive placenta, negative peripheral blood... ...	4.9%
Negative placenta, positive peripheral blood ...	2.1%

Toxaemias of Pregnancy. Albuminuria.—Fifty cases were admitted antenatally.

Seven were found to be uncomplicated infections with Schistosomiasis, two had haematuria but no ova were found.

Three of the remaining 41 cases had Bilharzia ova and a raised blood pressure. These were considered as having albuminuria with a Bilharzia infection as well.

Thirty of the 41 cases were primiparae. Six developed or were admitted with eclampsia.

Eclampsia.—Six primiparae were treated for eclampsia. Five were delivered of living infants, one was stillborn. One infant was premature and died within a week. All the mothers left hospital fairly well.

Anaemia.—Eleven cases of anaemia associated with pregnancy were treated as In-patients.

All showed a characteristic blood picture of megalocytic anaemia. Ten cases treated with raw liver made satisfactory progress. One case developed acute anaemia only after delivery and in spite of treatment died within ten days.

In this group of cases however, it is noteworthy that the Wassermann was double plus in four cases and single plus in three making a Wassermann positive rate considerably in excess of the average rate of In-patients.

Toxic Vomiting.—There were two cases admitted for treatment. One a multipara had labour induced surgically, was delivered of a living child, and both were discharged well. One was a primipara. She went into labour spontaneously, was delivered of a living child but collapsed and died immediately after.

Analysis of cases admitted.

In-patients admitted	972
Admitted for Antenatal treatment	284
Labour cases	525
Abortions	55
Postnatal complications	36
Infants	42
Other cases	30
Total deliveries	553
Living Infants	497
Stillbirths	68

Presentations in 553 *deliveries.*

Vertex unclassified	11
VLOA	274
VROA	222
VROP	14
VLOP	9
POP not classified	11
Breech not classified	11
RSA	4
LSA	1
RMP	2
Brow	1
Transverse	4
Compound presentation	1

Maternal deaths.—There were 13 maternal deaths in hospital. This does not represent the true maternal mortality for the following reasons :—

(1) Relatives tend to remove patients who are critically ill.

(2) No patient delivered outside and then developing sepsis is admitted to the Maternity Hospital owing to lack of accommodation.

Analysis of Maternal deaths in hospital. Total 13.

Acute anaemia, megalocytic	1
Caesarian section, heart failure	1
General peritonitis	3
Toxic vomiting	1
Peurperal fever	4
Pyaemia	1
Ruptured uterus	1
Valvular disease of the heart	1

Infant deaths in hospital. Total 32.

Convulsions	3
Congenital debility	2
Dystocia	2
Haemorrhage intracranial	4
Haemorrhage umbilical	3
Melena neonatorum	1
Prematurity	13
Intracranial injury	4

Stillbirths.—There were 68. Obvious obstetric cause could be shown for 43.

Morbidity.—There were 105 morbid cases according to the B.M.A. standard. This is high and likely to remain so for years to come. The chief contributing factors are probably as follows :—

(1) The prevalence of the native custom of introducing "medicine" into the vagina.

(2) The prevalence of gonorrhoea.

(3) The prevalence of malaria.

Morbidity.—Analysis of cases :

Breast affections	7
Caesarian section	1
Enteritis	3
General peritonitis	3
Gonococcal infection	3
Influenza	1
Malaria	5
Unclassified	38
Pneumonia	1
Pyelitis	2
Pyaemia	1
Ruptured uterus	1
Salpingitis	1
Sapraemia	31
Septicaemia	4
Toxaemia	1
Vaginitis	2
Total	105

Septicaemia.—There were four cases. In three, haemolytic Streptococci were grown from the blood. Two died in hospital and two were removed by relatives in a very critical condition. All occurred in cases of retained placenta brought in from outside after considerable haemorrhage and native interference.

Operations :

Abcesses opened	9
Breech with extended legs	1
Caesarian section	2
Circumcision...	22
Craniotomy	2
Curettage	42
Decapitation	1
Forceps	60
Internal version	4
Laparotory	8
Perineal repair	6
Retained plancenta, manual removal	20
Subtotal hysterectomy	1
Surgical induction of labour	15
Other operations-	3
Total	196

Average weight of infants delivered in Hospital.

Primiparae :

Number of infants weighed	181
Males, 89 average weight	6 lb. $6\frac{3}{4}$ oz.
Females 92 average weight	6 lb. 2 oz.

Multiparae :

Number of infants weighed	378.
Males 201, average weight	6 lb. $6\frac{3}{4}$ oz.
Females 177, average weight	6 lb. $7\frac{3}{4}$ oz.

Average birth weight 6 lb. $5\frac{3}{4}$ oz.

APPENDIX E. (HEALTH BRANCH).

Deficiency Diseases in Infants.

A Report by Miss C. D. Williams, Woman Medical Officer,

Princess Marie Louise Hospital, Accra.

There is a well marked syndrome, not uncommon among the children here, which I cannot find described in any of the ordinary text books.

There have been certainly more than ten cases seen at the Princess Marie Louise Hospital in the last year. Descriptions of the most well marked ones are attached. The disease is always fatal unless treated very early. It appears to be due to an insufficient diet, such as kenki and akassa alone, continuing for some months. The disease then makes itself apparent in a fulminating attack, the most marked symptoms being the skin condition. The patient generally dies within a month after this has appeared.

The skin change generally begins just above the ankles and then above the wrists. Later it spreads up the legs and the forearms, being more marked over the knee and elbow joints than over the long bones. There may be a few patches on the face and back. The distribution that is typical of pellagra is never seen. The changes are generally symmetrical and begin as small blackened patches on the

skin. The epidermis is crumpled and thickened. It remains soft and pliable and never becomes dry and branny as in pellagra. As these patches spread, the earliest formed ones appear to mature, and strip off very easily. The skin underneath them is light in colour, and extremely soft, so that very slight injury may remove all the superficial tissues. An unhealthy African child generally shows some degree of depigmentation. When the skin condition is fully developed the appearance is striking. There is the dark brown of the normal skin, the black patches of the earlier stages of the rash, and the denuded, almost white or raw areas where this has desquamated.

In all the cases that were seen there was some history of an abnormal diet. Breast feeding was being given by an old or pregnant woman—and the only food given was akassa—or akassa and kenki.

The African women lactate far more than the European. They breast feed one child until the next is born. The deposed baby still gets an occasional breast feed.

It is very unusual to find less than an interval of two years between the babies. The youngest of a family may be given occasional breast feeds up to six or seven years old. Then when the grandchildren begin to appear they are also suckled when necessary.

Some mammary secretion may be present in quite old women, who have not had a child for 20 years. The grandmothers are always willing to act as " Comforters " when there is no milk present.

The chief food for infants and invalids is akassa. In " Gold Coast Food " by Miss M. I. Field the preparation is described as follows :—

> " Soured corn dough is mixed with water in a basin to a smooth paste and then rubbed through a sieve into a pot so that no husks appear, more water and a little salt are added and the whole boiled for 15 minutes. Sugar is often added at the end. The finished akassa is a rather thick gruel."

The " corn dough " is prepared by grinding white maize, damping it and leaving it to stand. The sour akassa is made from corn that has been standing a long time, and much acetic fermentation has taken place. It is often responsible for gastro-enteritis in children. The sweet akassa is an excellent food for small children, but not by itself.

Kenki—to quote the same authority, is " Corn soaked in water for three days. It is then ground on a stone, sprinkled with water, put into a pot covered with plantain leaves and left for three days to sour. It is then ground again till quite smooth ; then the lump is divided into two, and one half is put into a pot of boiling water and stirred for some minutes till thoroughly mixed with the water. The pot is taken from the fire and the uncooked half is mixed with the cooked half and all the lumps are smoothed out. The mixture is then rolled in plantain leaves or corn trash in balls and boiled in water for some hours."

Akassa, therefore, by itself or with kenki is not likely to be an adequate diet.

Most children are efficiently breast fed until old enough to demand a more varied diet. The majority of those who have to depend on inefficient or no breast feeding plus akassa and kenki suffer from deficiency.

The fact that this disease is found in people living too exclusively on a maize diet makes it at any rate comparable with pellagra. The differences are obvious—but there are also points of similarity.

In considering the differential diagnosis the following points should be borne in mind :

Skin changes are extensive and well marked and entirely characteristic.

Nervous symptons except for persistent peevishness are absent. Reflexes are normal.

Anasarca is slight and confined to the extremities.

Temperature is irregular.

Pulse is rather rapid.

Respiration not markedly affected.

Stools apt to be loose and undigested, no ova or parasites. Diarrhoea is rarely marked.

Urine trace of albumen sometimes.

Liver is enlarged.

Spleen is not necessarily enlarged.

Age of incidence is from one —three years old.

Onset is rapid from one—three week .

Incubation period is between four and six months.

Eyes corneal ulcers are often present.

Blood contains no parasites. Wassermann reaction negative, no marked anaemia or leucocytosis.

Mucous membranes may be inflamed.

Mouth is ulcerated. Saliva generally acid.

No haemorrhage. No poroxysms of pain. No seasonal incidence.

No haematuria. Wasting not marked.

Does not react readily to treatment. Has not been observed in any child over four years old.

Pellagra.—Age 20–30 years. Spring recurrence, onset insidious wasting, dementia, rash on hands, feet, chest and face.

Diarrhoea persistent.

Scurvy.—Onset insidious. Considerable swelling of gums. Bruises easily

Haemorrhages from mucous membrane .

Albuminuria. Reacts readily to treatment.

Infantile scurvy.—Age about eight months. Tenderness all over. Sub-periosteal haemorrhages.

If no teeth—the gums are normal. Haematuria.

Rickets.—Skin changes not described.

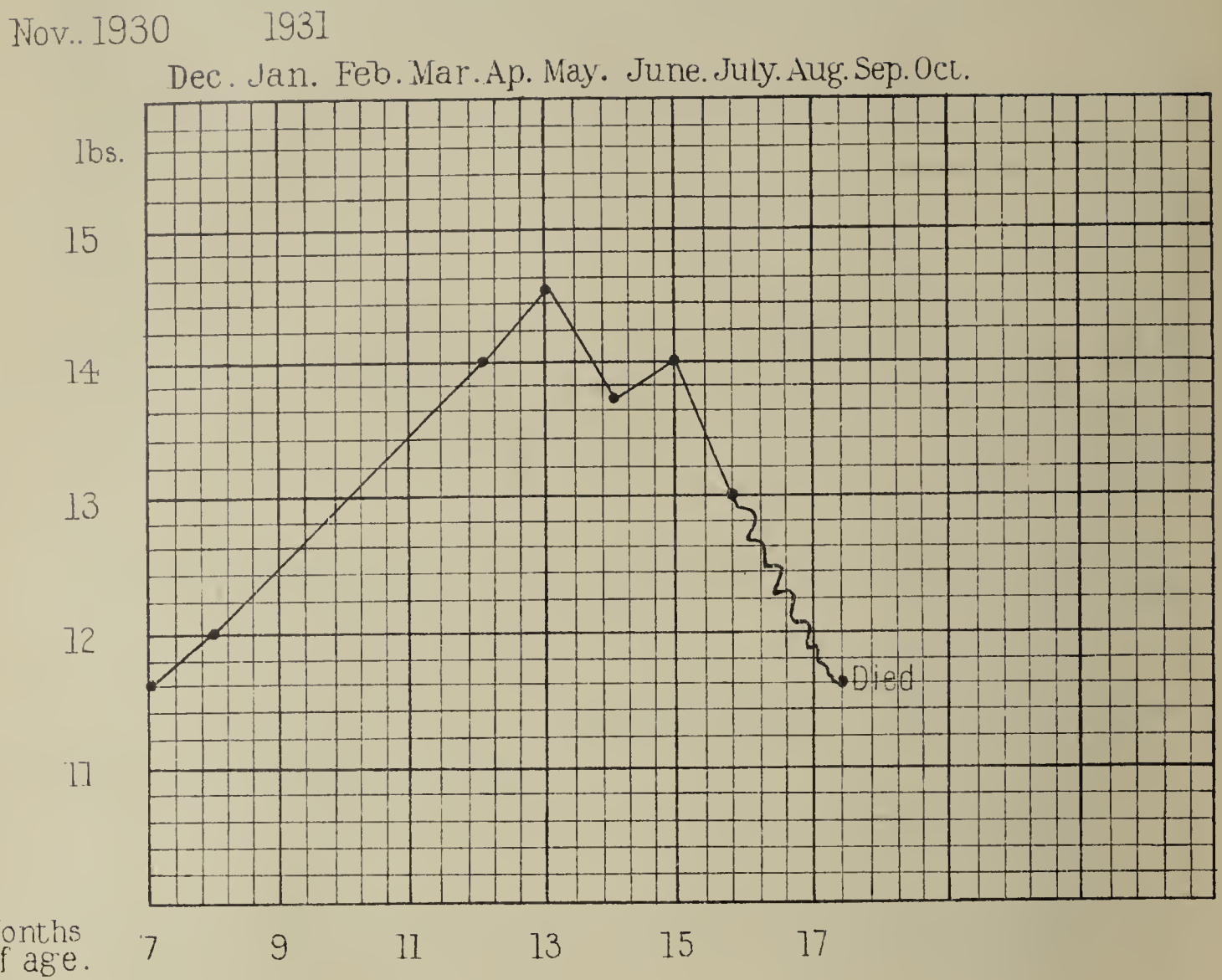
Purpura.—Haemorrhages from mucous membranes. Severe extensive ecchymoses.

Beri beri.—Anasarca, pericardial effusion. Onset gradual. Nervous symptons prominent. Palpitations. Skin changes not essential.

Infantile Beri beri.—Children of Beri beri mothers, paroxysmal pains. Age one mouth to three months. No skin change.

Treatment.—The similarity which this disease bears towards other deficiency diseases suggested that the treatment should be towards a dietetic remedy. In the absence of any knowledge as to what the defect was, a full and varied diet—rich in accessory substances was employed, together with various drugs.

In the last case quoted—that of Na Tsua—this treatment certainly delayed the progress of the disease.



Moley, (5983/30), *female, aged* 17 *months at death.*

Mother was a primipara and died four days after the birth of the child. Baby was fed entirely by the grandmother, whose youngest child was said to be two years old at the time. The grandmother however, looked at least 60 and the youngest child was more likely to be 12.

This child was brought to the Princess Marie Louise Hospital fairly regularly. There is no note of its being motherless, or of any instructions about the diet. It had attacks of fever and bronchitis in the normal way, but intertrigo and sore eyes also appeared. When one year and one month old it began to lose weight ; and some disease was suspected. The Wassermann reaction was tested and found negative. By way of diet the child was having the grandmother's milk and akassa only. On 7th July when the child was one year and six weeks old there is a note :— Sore mouth, saliva acid, cough, fever, swelling of feet, intertrigo, bowels open two or three times per day. Cod liver oil and malt with quinine and iron were given, and a mouth wash.

On 14th July it returned and was admitted. The condition certainly developed in two weeks at most, and the picture was typical. There was much oedema of the face, hands and feet. Unlike the oedema from ascaris the cheeks were not pendulous but there was a general puffiness all over the face. Nor was there that bulging of the eyelids, so characteristic of nephritis.

The tears and saliva appeared to irritate the skin, because the skin was peeling off round the corners of the mouth and the eyes. The saliva was acid, there were sores in the mouth. The tears were neutral to litmus paper. Reflexes were normal ; the general condition was very irritable.

The skin all over was atrophic in appearance. There were darker, almost pigmented patches on the forearms and the legs. The distribution of pellagra was noticeably absent, that is, the backs of the hands and the dorsum of the feet seemed to escape. The oedema of hands and feet was well marked.

The liver was slightly enlarged and so was the spleen. Except for the extraordinary condition of the skin there were no well-marked signs or symptoms. The temperature was irregular at first, but after systematic quinine this settled down, in spite of the fact that no parasites were seen in the blood.

The blood count was as follows :—

Leucocytes	...	...	12,400
Polymorphs	. .	. .	50.5%
Myelocytes	. .	. .	0.5%
Lymphocytes	...	. .	44.0%
Large mononuclears		...	5.0%

Punctate basophilia, anisocytosis and polychromatophilia were well-marked.

Wassermann reaction tested again was negative.

Stools and urine : nothing pathogenic found.

The dark patches on the skin became more extensive and well-marked.

On the buttocks and other exposed points the skin rubbed off very easily, leaving extensive almost raw areas. These were indolent and healed slowly or not at all.

It was difficult to examine the eyes, on account of the oedema of the lids and the irritable condition of the child ; and the fact that the gentlest handling was apt to remove large pieces of skin. However, after about one week one cornea ulcerated and the eye was destroyed.

The following treatment was adopted :—

Cod liver oil and malt, quinine and iron, ferri phosphas and ferri iodidum calcium lactate, thyroid extract, stovarsol, hydrag. cum creta, soda bicarbonas as a mouth wash.

Lactogen, akassa, eggs, pawpaw, oranges, bananas, marmite and meat juice formed the diet.

The child was in hospital for two months and though she appeared to improve a little at any rate the disease was never arrested.

She died on 9th September, of a terminal broncho-pneumonia.

At the post-mortem nothing definite was found except a pale, fatty and almost diffluent liver.

Quarmine (1321/32), *male, aged 2 years at death.*

Mother about 14 years old when child was born. Child was a microcephalic.

The parents realised that the child was abnormal and neglected it. They said he was breast fed entirely up to 18 months old. The mother then became pregnant.

The child was weaned and fed with akassa only for the last two months.

The syndrome was very well-marked. Skin peeling off on forearms and legs. Liver and spleen not palpable.

The photograph was taken post-mortem.

The post-mortem report is as follows :—

" Body is that of a very ill-nourished child with a very small head.

Thorax lungs and heart normal.

Abdomen liver enlarged (weight—560 grams) very pale and firm.

Cut surface is greasy and blood oozes from the central veins.

Gall Bladder full of bile.

Spleen congested.

Kidneys very pale, hard to differentiate between cortex and medulla. Capsule strips easily.

Small Intestine extremely thin walled. Peyer's patches prominent. Contains green slimy stool.

Large Intestine thin walled and contains green slimy stool.

Cause of Death.—Avitaminosis.

Microscopic Section of Liver.—Very marked fatty degeneration.

Culture of Intestinal Contents.—Lactose fermenters isolated."

Tetteh (1660/32), *male, aged one year and four months at death.*

First seen 29th March, 1932, aged one year and two months. Mother is seven months pregnant. The child was weaned four months ago. Since then has been given nothing but akassa and kenki.

In very poor condition. Stomatitis. Swelling of feet, some "pellagrous" patches on the back.

Treatment :—Codliver oil and malt, quinine and iron, mistura potass. chlor., lotio boroglycerin : for mouth wash.

Advised diet containing fruit, eggs and tinned milk.

14*th April*, 1932.—Admitted with this condition very well-marked.

Mouth sore. Skin of forearms and legs exceedingly typical.

Some oedema.—Liver enlarged. Very peevish, stool loose.

Blood.—No parasites seen.

Stools.—No ova, no protozoa. Urine—a trace of albumen.

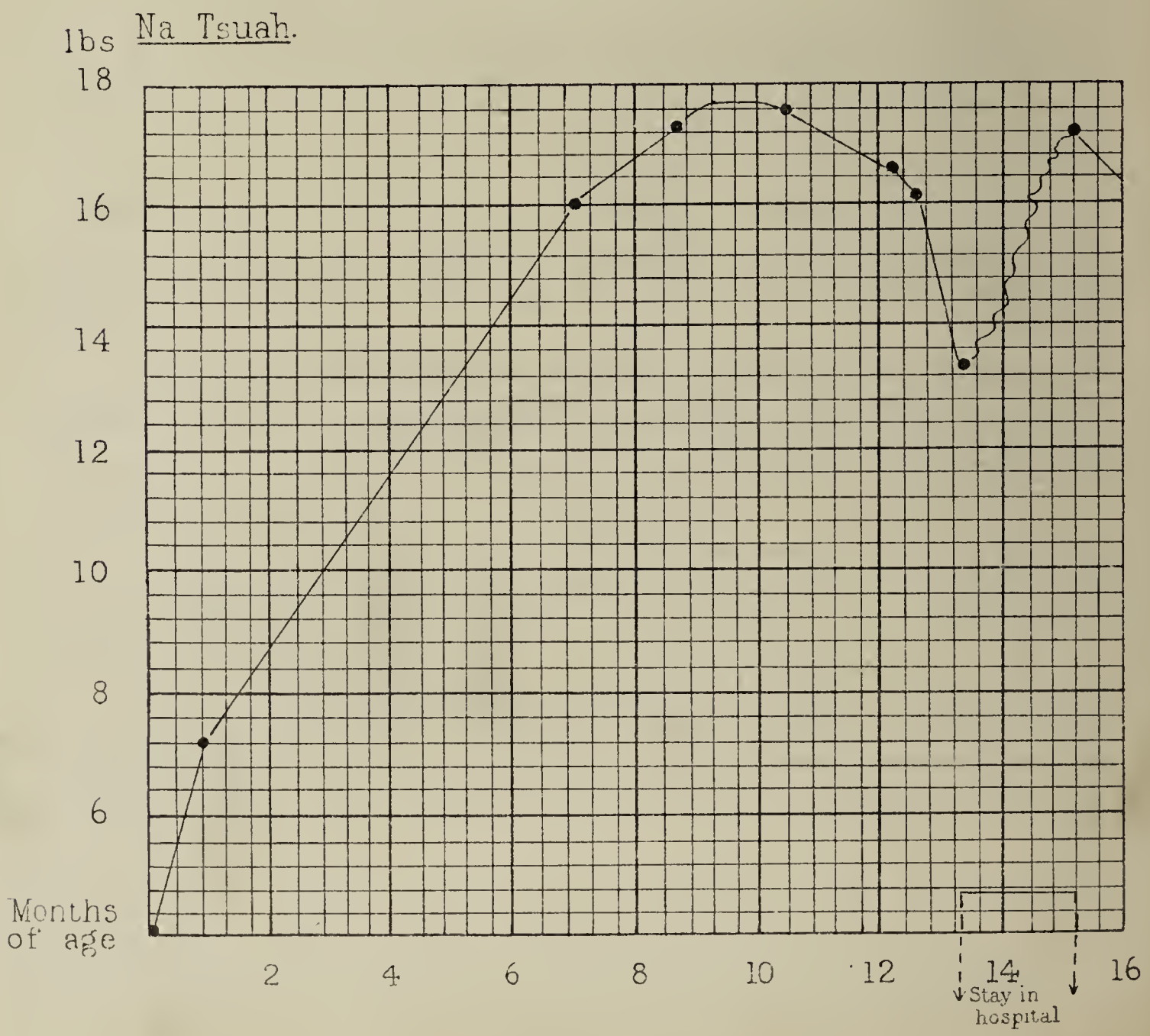
Wassermann reaction negative ; mother's Wassermann reaction negative.

Treatment :—Olive oil to the skin, cod liver oil and malt, quinine and iron calcium lactate, parathyroid, ferri phosphas and ferri iodidum.

Marmite, fruit, eggs, akassa, milk, tomato juice, liver juice and butter formed the diet.

The child's condition never improved. On 3rd May the condition of the left eye became bad and the cornea ulcerated.

On 6th May the child died. Photograph three days before death.



Na Tsuah, 432/32 (6090/30), *female, aged* 10 *months at onset.*

Normal full time child. When the child was three months old the mother became pregnant again and at term gave birth to twins.

This child was given akassa and breast milk. Put on weight and grew normally. Had some attacks of intertrigo and " sore eyes."

At ten months old the child stopped gaining weight, was ordered tinned milk, but was given practically an exclusive diet of akassa and kenki.

Given cod liver oil and malt and quinine and iron. At one year old began to have attacks of diarrhoea.

At one year and two months was admitted with syndrome well marked. Face, feet and hands swollen, mouth sore, saliva acid, tears alkaline, spleen and liver both enlarged, stool strongly acid, and no ova and no parasites.

Blood.—No parasites.

Reflexes normal. Purulent discharge from eyes and vagina. Irritable Mottled condition of skin of forearms and legs—most marked at ankles and wrists. Skin is desquamating over these dark areas, leaving light-coloured, almost raw patches underneath. These light-coloured patches take a long time to become normally pigmented.

Treatment :—Cod liver and malt, quinine and iron, cacium lactate, sodae bicarbonas for mouth wash.

Breast feeding by mother, Nestles' sweetened condensed milk, eggs, akassa fruit, marmite and tomato juice formed the diet.

The child appeared to recover completely while in hospital, but the general condition was not maintained when last seen. At 18 months old she only weighed 15 pounds. There was oedema of the face and photophobia and much irritability Na Tsuah aged one year three months, weight 16½ pounds. The photograph was taken when the child was convalescent. The wrinkling on the dorsum of the feet can be seen where the oedema is disappearing, also the dark mottling on the legs and light coloured areas where the new skin is showing but has not yet become pigmented.

I am indebted to Mr. Buckner of the Gold Coast Hospital for the photographs and to the staff of the Research Institute for the pathological findings.

APPENDIX F. (HEALTH BRANCH).

Treatment of Leprosy by Protein Shock Therapy.

Note by Dr. V. E. Whitman, Medical Officer of Health, Kumasi.

The prospects of " curing " the disease by ordinary methods appeared so remote that experiments with protein shock therapy were considered justifiable.

Adult male patients (1 and 2 in the subjoined table) both cases of nerve leprosy of long standing, were selected. At my request Dr. R. D. Reid, the Acting, Medical Officer, very kindly agreed to admit these men to the Isolation Ward of the Colonial Hospital for the treatment. They were given 1 c.c. of standard T.A.B. vaccine intraveneously on the morning of the 25th of August, 1931. That evening their temperatures rose to 103.2°F. and 103.0°F. respectively. Their temperatures had both fallen to normal by 6. a.m. on the 26th of August, and remained normal.

On the morning of the 1st of September, 1931, they were given a further 1 c.c. of T.A.B. vaccine intravenously. Their temperatures rose that evening to 102°F. again falling to normal by 6 a.m. on the following morning.

They were discharged feeling perfectly fit on 4th September, 1931, and returned to the Leper Settlement at the Contagious Diseases Hospital. Previously, both had suffered so severely from formication that they complained they could hardly sleep.

Following the first injection this greatly diminished, after the second it had disappeared and has not yet returned. One of them had a trophic ulcer of about six months duration on his left foot. This began to show signs of healing and in three weeks had been reduced to very minute proportions ; it has remained in this state up to the present.

In the forgoing cases the reaction was so mild that it was decided to treat the next cases in bed in the Contagious Diseases Hospital. Four male cases were treated with similar results to those detailed above. So satisfied were both patients and myself that, with two exceptions, all the in-patients in the Settlement asked for and were given the treatment. In all 26 persons were treated. No complications arose and improvements were noted in every case.

One week after the second dose of T.A.B., treatment with Alepol was recommenced and continued for two months, one month rest was then given, after which treatment with Alepol was continued.

The last cases treated were injected in November, 1931, so that in every case at least three months has elapsed. The results up to the 1st of March, 1932, are shown in the table below. It is much too early to suggest that any single case has been " cured " but the fact that all those sufferers have been free from formication, which to them is one of the most distressing features of the disease and which appears to be invariably present, for three months is to my mind sufficient justification for the treatment.

No.	Name.	Type of Disease.	Injection of T.A.B.	Ulcers.		Formication Result.
				Position.	Result.	
I	Kwami Boaten ...	Nerve	2	Nil	—	Completely relieved.
2	Kofi Kumah ...	Nerve	2	Both feet	1 healed 1 improved	,,
3	Kwami Kyere ...	Mixed	2	Nil	—	,,
4	Kobina Bio ...	Mixed	2	Nil	—	,,
5	Kwesi Dagyam ...	Nerve	2	Nil	—	,,
6	Yaw Fih	Nerve	2	Feet and hand	All healed	,,
7	Ambah Bio... ...	Mixed	1	Ankle	Healed	Partially.
8	Yaw Buachyi ...	Mixed	2	Feet and hand	Hand healed feet improved	Completely relieved.
9	Ambah Mensah ...	Mixed	2	Nil	—	,,
10	Kodjo Buachyi ...	Nerve	2	Nil.	—	,,
II	Ekua Nzimah ...	Nerve	2	Nil	—	,,
I2	Adabraka Moshi ...	Nerve	2	Both feet	Improved	,,
13	Arabah Amissah ...	Mixed	I	Both feet	Improved	Partially relieved.
14	Ambah Wangara ...	Nerve	2	Both ankles	Healed	Completely relieved.
15	Kwesi Jambrah ...	Nerve	2	Both feet	Healed	,,
16	Ambah Entwiwah	Mixed	2	Nil	—	,,
17	Ettufua	Nerve	2	Nil	—	,,
18	Asetu Kotokuli ...	Mixed	2	Nil	—	,,
19	Abudulai	Mixed	2	Both feet and hand	Healed	,,
20	Abebo Moshi ...	Nerve	2	Both ankles	Healed	,,
21	Mama Walla ...	Mixed	2	Feet and hands	1 foot not better remainder healed	,,
22	Kofi Apawa ...	Nerve	2	Both feet	Healed	,,
23	James Asimah ...	Mixed	2	Both feet and hands	Healed	,,
24	Lamiri	Nerve	2	Nil	—	,,
25	Effuah Kesi ...	Nerve	2	Nil	—	,,
26	Effuah Buatima ...	Nerve	2	Nil	—	,,

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